

62504/13

MEDICAL SOCIETY
OF LONDON



ACCESSION NUMBER

PRESS MARK

GOOD, J.M.

A
DISSERTATION
ON THE
DISEASES

OF
PRISONS AND POOR-HOUSES,

PUBLISHED AT THE REQUEST OF THE
MEDICAL SOCIETY OF LONDON,
Having obtained the Premium offered by the Society for the
best Essay on this Subject.

TO WHICH IS ADDED A SINGULAR CASE OF
PRÆTER-NATURAL FŒTATION,
With Remarks on the Phenomena that occurred.
READ BEFORE THE SOCIETY, OCT. 20, 1794.

BY JOHN MASON GOOD, F. M. S.

Per me si va nella città dolente ;
Per me si va nell' eterne dolore ;
Per me si va tra la perduta gente. DANTE.

Here stretch the realms of wretchedness and woe,
Here grief for ever heaves her hopeless sigh,
And guilt's devoted sons their crimes absolve.

LONDON:

PRINTED FOR C. DILLY, IN THE POULTRY.

1795.



TO
THE PRESIDENT,
THE TREASURER,
AND
FELLOWS AT LARGE,
OF THE
MEDICAL SOCIETY OF LONDON,

THIS LITTLE VOLUME,
PUBLISHED AT THEIR REQUEST,

IS,
WITH GREAT GRATITUDE,

INCRIBED,

BY
THEIR MUCH OBLIGED FRIEND,

AND
VERY HUMBLE SERVANT,

THE AUTHOR.

ADVERTISEMENT.

AT the annual meeting of the Medical Society, at their house in Bolt Court, Fleet-Street, March 8, 1794, the Secretary, in the name of one of the Fellows of the Society, offered a premium of Twenty Guineas for the best Dissertation on the following Question.

“What are the Diseases most frequent in Work-houses, Poor-houses, and similar Institutions? and what are the best means of cure, and of prevention?”

Each contending Dissertation was to be delivered to one of the Secretaries by a time specified by the laws of the Society; and the name of the successful Candidate was to be publicly announced, and the premium publicly awarded to him at the next annual meeting in 1795.

In the month of February last, the following letter was received by the Author of the present Dissertation,

tion, from the Secretaries to the Medical Society; and, on the 9th of March, the premium was publicly adjudged to him.

S I R,

WE have the honor of informing you, that the Council of the Medical Society of London have unanimously adjudged the premium of Twenty Guineas to you, for your “*Dissertation on the Diseases of Prisons and Poor-houses.*” And we have particular pleasure in communicating the unanimous wish of the Council, that you would publish the said Dissertation as soon as possible. *We are,*

S I R,

Your most obedient servants,

T. BRADLEY, } SECRETARIES.
H. FIELD, }

Bolt-Court, Fleet-Street,

Feb. 18, 1795.

The Dissertation is divided into three sections: the first, containing a short sketch of the Literary History of the places adverted to: the second, a History of the Diseases

Diseases most frequently traced in such situations ; with the mode of treatment, and remedies to be employed during their presence : and the third, a Statement of what appears to the Author to be the best means of preventing such Diseases from recurring in future.

PRIZE DISSERTATION,

&c. &c.

SECTION I.

Preliminary Observations, with a short Sketch of the Literary History of the Places referred to.

THE subject selected for the ensuing Dissertation, and the honorary reward so liberally attached to the successful candidate, do equal credit to the judgment and the heart of the humane and generous proposer of them; and must add, if indeed any thing can add, to the exaltation of his character, both as a man, and as a physician.

B

The

The term *work-houses*, occurring in conjunction with that of *poor-houses*, is designed, I presume, to include BRIDEWELLS; and the expression *places of similar confinement*, eleemosynary institutions, and prisons in general.

To determine the precise diseases which have occurred, and which still continue to occur, in edifices and constructions of this nature, and that with such a prevalence as to render them, in any measure, endemial, it is necessary, first of all, to determine what have been, and what still continue to be, the species of architecture planned out, and the systems of regulations adopted. This, therefore, I shall, in some degree, attempt; and, as I am writing to a literary Society, shall take the liberty of adjoining some few observations on the precise degree of necessity

cessity of such institutions in former ages, from the aggregate number of paupers and prisoners appertaining to different nations, and the different means made use of for their employment or punishment.

The poor laws, and, indeed, the provisions for paupers in general, are more numerous in this kingdom than in any kingdom of the world: and the first seem to form a system altogether isolated, and alone, neither originating expressly from, nor being expressly imitated by, any other nation whatsoever.

This establishment derives itself evidently from the dissolution of monasteries in the reign of HENRY VIII. For the first act of parliament, inculcating any provision for the poor, was

in the twenty-sixth year of his accession to the throne. And, from this period, throughout the whole of the three succeeding reigns, many additional statutes were enacted for this express purpose, particularly in the reign of ELIZABETH.

Previous to this time the dependence of the poor for support was principally on ecclesiastical establishments, and voluntary contributions; from whence, indeed, they derive their principal support, even at the present period, in all Roman Catholic countries. CHARLEMAGNE divided the tithes of France into four equal portions: for the repairs of the churches themselves, for the poor, for the bishop, and for the parochial clergy. And the Council of MATISCONA, in its canon on
tithes,

tithes, dedicates some part of them to the use of the poor.

In this country a fourth part of the tithes collected was generally separated for this purpose: and when, in process of time, this allotment was infringed upon, and evaded, and the neighbouring monasteries usurped the whole to themselves, they stipulated to support the paupers that surrounded them by largesses from their own revenues. Whatever objections may be raised to our present establishment of maintenance, this was, surely, a much worse: there was no governor or superior to control them; their days were spent in vice, and idleness; and every monastery was for ever surrounded by the most filthy thieves and vagabonds.

On the means of support which paupers possessed in periods antecedent to these, our conjectures must be often vague and uncertain; but as it is a subject which appears, in some considerable degree, connected with the design of the present paper, I shall take the liberty of hazarding some few conjectures and historical anecdotes relating to it.

Among the JEWS, whose theocracy, with the most benevolent interference, extended to the very cattle they possessed, the poor, and the fatherless, were supported by a tithe raised every third year expressly with this view.*

The spontaneous fertility of the soil in EGYPT, and the surrounding king-

* Deut. cap. 14.

doms,

doms, and the simplicity of the diet made use of, left but very few, indeed, to be found, who were incapable of providing for themselves. And, in cases of sickness, physicians were established throughout the different districts of the countries, to administer advice and medicines free from expence, with the appointment of a salary raised and determined by the governing powers. In EGYPT, the physicians must have been very numerous, as each, for the sake of a more thorough investigation, was, according to HERODOTUS,* only admitted to the practice of one single disease, and never pretended to any more. In the ruder ages of medicine, some advantage might be expected from such a regulation. But almost every advantage, which we are

* Lib. ii. cap. 84.

hereby led to expect, must have been completely subverted by the obligation which, DIODORUS SICULUS informs us, every physician was under of prescribing agreeably to the rules and receipts of their sacred registers. If he deviated from these, and the patient failed of success, the life of the physician was endangered by the event; as the deviation was deemed rash, and unjustifiable, and he alone was responsible.*

The registers here referred to, appear to have been formed from a custom introduced among the EGYPTIANS at a very early age: when it was the general practice to expose the diseased in the most frequented parts of the city; that if any person passed by, who had been

* Lib. i. p. 74.

afflicted with a similar sickness, and had discovered a remedy or palliation, he might divulge it. These histories of cures were, after the invention of hieroglyphics, placed in their temples, and open to public examination. They were afterwards arranged, and inspectors appointed to superintend them, and give their opinion in cases of critical emergency. An occupation not dissimilar from that of our modern physicians; and which perhaps, though at so extreme a distance of time, may have lain the first foundation for it.*

Among the GREEKS and ROMANS, we meet with no poor-houses, or public eleemosynary institutions whatever: and the paucity of their poor rendered these almost unnecessary. For this

* Vide Goguet. Orig. leg.

paucity many reasons may be adduced. The republics were, in general, of small extent, and the government much in the possession of the common people. The care and instruction of all ranks of youth, among the SPARTANS, were provided for by the public laws of LYCURGUS. It was a regulation which was afterwards copied by the earliest inhabitants of ROME, which PLUTARCH highly approves of, and as strongly condemns NUMA for not having perpetuated in his code.*

The numerous wars in which the different states of GREECE and ROME were perpetually engaged must, moreover, continually, and that in a very considerable degree, have diminished the numbers of their poor: for their

* Quintil. de Orat.

poor were almost all soldiers, and their pay was frequently exorbitant. When XENOPHON enlisted into the service of SEUTHEs his establishment, observes Mr. HUME, was only four daries a month; a sum which merely by four times exceeded that of his private soldiers, each of whom was allowed one.* In the time of MARC ANTONY the centurion's allowance was certainly, in some measure, encreased; but in that of POLYBIUS it only doubled the allowance of a private. And there are no instances of wars in which soldiers were not allowed to enrich themselves by plunder. It was this hope of plunder, indeed, that frequently increased the number of wars, and contributed to render them bloody and ferocious. LEONIDAS, with three hundred SPAR-

* On the Populousness of Ancient Nations.

TANS, destroyed twenty thousand PERSIANS at the straits of THERMOPYLÆ: and ARISTOMENES celebrated three hecatomphonia or sacrifices instituted in honour of those who had slain, at one time, an hundred enemies with their own hands. It was on this account ISOCRATES declares that there were but few states, besides ATHENS, that could boast of a succession of kings for four or five generations.

In periods of profound peace the common lands among the ROMANS were very extensive: and the *leges Sempronix*, which CICERO so frequently adverts to with patriotic enthusiasm,* secured a sufficiency of these lands for the poor, and provided them with im-

* O nomen dulce libertatis! O jus eximium nostræ civitatis! O lex Portia, legesque Sempronix! &c. ad Verrem.

plements of agriculture : and they allotted corn to those who were not able to work, at the most trifling expence. The *lex CLODIA*, in a short time afterwards, procured them this corn for nothing.

JUVENAL and MARTIAL* both make mention of *sportula* or presents regularly made by the richer citizens or patricians, to their smaller and incapacitated clients. And, in the reign of AUGUSTUS, there was a public distribution of corn to two hundred thousand citizens. From this estimate we may, indeed, form some calculation of the number of poor at this time in ROME : but the calculation, even from such a datum, must be subject to much conjecture and inaccuracy ; because, says Mr. HUME, with great propriety,

* *Epigr. lib. 1. 60. lib. 3. 7. et passim.*

this

this was a gratuity to ingratiate himself into the favor of the ROMANS, and because many received it who did not, by any means, stand in need of it.* The portion every month was five modii to each claimant.†

On the subject of ancient prisons, and the modes of their construction, our information is not much more accurate than on the number and support of the poor. Undoubtedly every nation had its prisons and places of public confinement: but the condemnation to long periods of imprisonment, so much practised in modern times, and especially in GERMANY and PRUSSIA, where capital punishments are rarely or never to be heard of, not being a punishment in use among the ancients, those convenien-

* Vide Supra. † About five-sixths of a bushel.

cies and minute attentions, which are now become indispensably necessary, were then little regarded, and might have been more easily excused.

The public prison among the ROMANS was in the forum. It was erected by ANCUS MARTIUS, and afterwards much enlarged in the reign of SERVIUS TULLIUS. It contained many dark cells, or dungeons; for SALLUST informs us, that a part of it was constructed beneath the ground: and it had keepers or turnkeys, who, according to PLAUTUS, were denominated Trefviri.* These kind of subterranean cells or dungeons are still constructed in many places; par-

* Quid faciam nunc si Trefviri me in carcerem compegerint? -

Inde cras è promptuariâ cellâ depromar ad flagrum:
Ita quasi incudem me miserum octo homines validi
cædent. IN. AMPHITR.

particularly

ticularly in the prison of ST. JOSEPH at LYONS, and the county gaols at HARWICH and NOTTINGHAM; and, more especially at ALNWICK in NORTH-UMBERLAND, where the only entrance is by means of a small aperture, and a ladder. The seven towers, at CONSTANTINOPLE, have all of them, those at least that remain, for four of them are at this time in a state of ruin, dungeons as well; but these are of small depth, being not more than five feet beneath the surface of the earth.

Besides this public prison in the forum, the ROMANS had other prisons of a different kind, and for different views. They generally erected them for temporary purposes in their camps; a construction which was then extremely necessary, when garrisoned towns were but few in number, and at a great distance

tance from the camp; a construction which, if we credit the descriptions of Tasso, was made use of so late as by the Crusaders in PALESTINE; for it was from such a place of confinement, he informs us, the ferocious ARGILLAN suddenly disengaged himself, and joined in the sanguinary battle:

L'aurorá intanto il bel purpureo volto
 Già dimostrava dal sovrán balcone:
 E in quei tumulti già s'era disciolto
 Il feroce Argillan di sua priglione.*

The richer patricians among the ROMANS were, moreover, in possession of ergastula or private prisons for their slaves. These were probably, likewise, dark cells or dungeons; at least COLUMELLA advised that they should be thus constructed, and sunk beneath the

* La Gerus. Liber. Cant. 9.

ground.

ground. Here the ROMANS slaves underwent those punishments which their crimes deserved, or the arbitrary will of their masters chose to inflict. Benevolence is not a virtue that marks the ROMAN character. They had, therefore, no poor-house, or eleemosynary institution for slaves when they became useless, or sick. In this case they were generally exposed in some island on the TYBER, from whence they had no means of escaping, that they might die by being starved. And the elder CATO publicly professed to sell his infirm or diseased slaves at any price he could procure for them.

When the SPARTAN slaves or HELOTES were imagined to be too numerous, they were frequently diminished by the cryptia, or a permission, granted to their youths, to attack and
destroy

destroy them unarmed. And the general mode of punishing criminals, and not unfrequently captives, among the SPARTANS was, by throwing them together into a deep cavern to starve, surrounded by the putrid atmosphere of those who had died first. It was from a cavern of this kind that the celebrated ARISTOMENES, general of the MESSENIANS, so marvelously escaped, as is related by PAUSANIAS, after having been thrown in headlong.

The laws and punishments of the EGYPTIANS were, for the most part, capital; and, the punishment soon following the arrest of the culprit, there was but little occasion for prisons of any kind. Among the ATHENIANS the punishments, as determined by SOLON, were death, exile, or atimia: and when the people were incapacitated by
poverty

poverty from contributing their share of the rate or *modus* levied by the state, they were seized by the collectors of taxes and sold for slaves. Such, not indeed to the credit of Athenian taste or humanity, was the fate of XENOCRATES the Philosopher.*

Of these various punishments, that of exile was by far the most common. "It would be easier," says ISOCRATES to PHILIP, "to raise an army in GREECE, at present, from the exiled vagabonds than from the cities."

In honour of the ATHENIANS, however, it should be remarked, that their treatment of slaves is said, by authors of other nations as well as their own,†

* Plut. in vit. Xenocr.

† Demosthenes, Xenophon, Plautus.

to have been extremely liberal and kind: and they possessed, perhaps, the only institution throughout all GREECE that can be called eleemosynary; which was the Temple of THESEUS, in the lower city, erected by CONON. It was a sanctuary for the distressed, whether free or slaves; and in this temple, slaves complaining of great severity and ill usage, obtained a transfer of themselves to other masters. This is an institution which was, long afterwards, prevalent in many sanctuaries of Christian churches; and which, to this hour, is continued at the grand hall in the hospital at MALTA; where not even a murderer can be arrested, should he be found there.

In modern times, the buildings allotted for the reception of prisoners
and

and the poor, and especially in this kingdom, are of such various forms, dimensions, materials, and situations, with such strange diversities of customs and rules, that it is almost impossible to arrange them into regular and appropriate classes. In general, however, they consist of old castles, barns, or monasteries, purchased by the county or district for this purpose. Sometimes, however, they are the gift of individuals, as at SHEFFIELD, where there is prison which was granted by the Duke of NORFOLK for the confinement of debtors; and sometimes they are still private property, and subject to an annual rent for occupation: instances of which last are to be found at the MARSHALSEA prison, which belongs to four landlords, and is farmed at one hundred guineas per year.

There

There were few buildings erected in this kingdom expressly for these purposes before the year 1760; since which time the benevolent exertions of Mr. HOWARD, Mr. HANWAY, Dr. FOTHERGILL, and some few other spirited and patriotic gentlemen, have produced many, and those of great influence and utility; especially in that class, most important to the morals and happiness of all nations, Penitentiary Houses.

To the very valuable papers and publications of Mr. HOWARD, whose friendship I shall long boast of as a source of high benefit, and advantage to myself, I shall have frequent occasions to refer in the sequel of this Dissertation; and shall instance in many places, as I proceed, what have been noticed by him, or what have appeared

to

to myself, as perfections or defects in those buildings of the best situations, or constructions, which have of late been erected in this kingdom.

SECTION

houses, workhouses, and prisons, there are, however, other diseases which are continually presenting themselves, though they do not originate in such places of public confinement, being solely introduced by those who enter, in consequence of prior vice, misfortune, or uncleanness. The diseases of the above places it will be necessary, therefore, to distribute into two classes.

First, those which originate ab extra, but which are introduced at the entrance of paupers and prisoners; and,

Secondly, those which originate within, from the operation of some, or all of the causes above specified.

Of those which are introduced from without, the chief are **ULCERS**, the **VENEREAL DISEASE**, and the **ITCH**.

The

The poor are, in general, but little habituated to cleanliness; they are liable to a thousand accidents, and a thousand temptations, which every superior rank of life is free from; and they feel not, from want of education, the same happy exertion of delicacy, honor, and moral sentiment, which every where else is to be met with. It is not surprising, therefore, that such diseases as the above should be frequent in almost every prison, and every poor-house, in the kingdom; and, though my experience has extended to many buildings of both the above descriptions, I have scarcely ever found one, which was of moderate extent, but furnished me with instances of all these diseases at the same time.

The methods to be adopted in the cure of these are so well known, and

have been so frequently enlarged upon, by writers of the greatest eminence and merit, that but little information can be expected in a treatise of this kind.

In poor-houses we sometimes meet with ULCERS of so many years standing that it would be useless to attempt the cure of them, and hazardous to the general health of the patient if we could effect it. Rest and quietude, however, as they afford some assistance to these, commonly prove of great benefit to those of less date and malignity; as, in general, they both proceed from external violence or excessive labor.

Those whose poverty obliges them to apply to their parish for assistance, have seldom had it in their power to enlarge the ulcer by their intemperance. But this, on the contrary, is
a cause

a cause of increase which we frequently meet with in Bridewells, and other prisons, on the first admission of patients: and happy would it be for the patient himself, and mankind at large, if this cause of increase were to cease here. In many places I have personally known it cease; and I have had the pleasure to remark, that the simplicity of the diet enjoined, and the regularity and firmness with which that diet was enforced, have produced the most speedy and salutary change. But in far too many instances I have known the contrary; I have seen the gaoler's lodge converted into an alehouse, and the seat of reformation thus become a seat of riot and debauch.

Such are almost all the prisons where the gaoler is allowed no fixt salary, but derives his income from the perquisites

and fees of his office. Such is the Four Court MARSHALSEA Prison in DUBLIN: where, Mr. HOWARD informs us, at the time of his visitation, there was a pawnbroker's shop; and where, independent of what had been sold at the tap of the gaoler, a hoghead of whiskey had been clandestinely drank in a week.* The Committee of the House of Commons reported, in 1787, that this prison appeared "a scene of disorder, irregularity, and intoxication." Such, indeed, is too generally the character of all the Prisons in SCOTLAND and IRELAND. At the TOLBOOTH, in EDINBURGH, the gaoler has the liberty of vending every species of spirituous liquors; and in the NEW-GATE in DUBLIN, the above author informs us, that the prisoners will sell

* Hist. of Lazarettos, &c. p. 80.

their

their bread at any price to procure spirituous liquors; that many have died from intoxication, and that here likewise a puncheon of whiskey has been drank in a week.

This licentious, and ruinous practice, is not, however, confined to SCOTLAND and IRELAND; too many instances of it are to be met with in our own country.

At the BIRMINGHAM and LEICESTER town-gaols, the governors have no salary, but support themselves by licences for beer. And in many other gaols, even where such licences are abolished, but the unrestrained introduction of beer and spirits is still allowed, I have seen the turnkeys themselves bloated from intemperate drinking, with tumid or ulcerated legs, and

large red carbuncled faces. Though in the prosecution of this treatise, I shall have occasion to point out many prisons with far better customs and regulations. And where such customs and regulations prevail, the surgeon has but little comparative trouble in the healing of ulcers. They generally yield to the common topical applications, and the order and regularity introduced.

But if the ulcer should prove obstinate, from the length of time it has lasted, or the scorbutic temperament of the patient; if its edges should be callous, its surface foul, and its discharge ichorous and fetid, the patient should then be allowed a milk diet, with the internal use of mercurial alteratives. Such a treatment will, in general, be sufficient to effectuate

tuates a cure : and after the cure, and, indeed, during the cure itself, a bandage, moderately tight, should be applied, and worn by the patient, in the former instance, for a considerable time ; as the cure will hereby be accelerated, and the limb, when sound, acquire additional firmness and vigor.

In both PRISONS and POOR-HOUSES, which are too often the receptacles of the idle, the uncleanly, and the abandoned, nothing is more common, especially if they be appropriated to large and manufacturing districts, than the admission of patients with the ITCH, and the VENEREAL DISEASE.

In small villages, where we scarcely ever meet with any infirmary whatever, it is not to be expected that a ward should be separated for the reception of such

patients. Situations like these, where the houses are but few, and scattered at a great distance, and where the means of communication are much interrupted, and more particularly, where no large and manufacturing town is adjacent, are not often subject to diseases of this description; but in cities and populous towns in general, as MANCHESTER and LIVERPOOL, in the poor-house of which last place there are seldom less than a thousand, there ought not only to be an infirmary for every such place of public confinement, but there should likewise be a distinct ward allotted for patients laboring under both these complaints. The ITCH will otherwise have the most unrestrained opportunity of spreading; and the VENEREAL DISEASE cannot have a chance of being properly attended to and eradicated. The common diet and general

neral practice of salivation, as exhibited in the different hospitals, in the metropolis of this kingdom, will be the best diet and practice to adopt in most situations for this last complaint. But the fetid effluvium arising during the ptyalism, would surely be productive of the greatest injury and inconvenience to common patients, debilitated by fevers, asthmas, or other complaints, and ought to be kept at a due distance with the most sedulous scrupulosity.

In this common ward of the infirmary, the air is generally rendered already too confined and impure, from improper construction, or the number of patients admitted. Instead, therefore, of adding to the impurity of an atmosphere, in many instances almost irrespirable in itself, by the admission and salivation of venereal patients; we

are called upon to ventilate and purify by every possible exertion ; to let loose the noxious vapor that arises, and introduce a healthy and reviving air. This seems to be so obvious, that where there is but one ward allotted for an infirmary, I have never yet known venereal patients attended to at all ; excepting perhaps by the allowance of a few cooling purges, when the violence of the complaint has excited the curiosity and notice of the attendant surgeon.

If the disease be a simple gonorrhœa, and the temperament not injured by other diseases, this treatment alone, with the scanty diet made use of, will in time be generally found sufficient. But I have known instances, both in poor-houses and prisons, and especially the latter, where the disease has been
making

making an unrestrained progress for more than two years, and would have continued longer, but from the discharge of the persons confined. This is an evil which calls loudly for redress from magistrates and overseers; and an evil which is, in no instance, attended to so much as it ought to be. I have known twenty diseased patients in one prison; many of whom were most deplorably afflicted, and were sentenced to two and three years confinement. I have remonstrated with magistrates upon this subject: in some instances I have, fortunately, succeeded; but the common answer has been, that it is a disease the patient has brought upon himself by debauchery, and that he must therefore take the consequence.

This answer is both cruel and impolitic. The patient is hereby, in the first place,

place, prevented, by his confinement, from obtaining the cure, and the means of cure, which he might have possessed had he been at liberty ; and, secondly, it totally defeats, what ever ought to be one of the chief motives in imprisonment, the melioration of the prisoner's morals and his general health, if impaired ; that when the period of his confinement is expired, he may go forth, sensible of his past misconduct, and fit for engaging in some honest and industrious employment.

For the cure of the VENEREAL DISEASE and the ITCH, the allotment of a small room will, in general, be sufficient ; as moderate warmth is here of some consequence ; and as it is to be hoped the number of such patients, if timely attended to, can never be great.

In

In most of the new penitentiary-houses, where the prison is divided throughout into solitary cells, some of those cells might be selected for each of these purposes; with the only alteration of having the windows glazed.

Here venereal patients, and those afflicted with the itch, may be advantageously confined till a cure is completed. And the uncomfortable solitude of their situation, will be an additional means of inducing them to be attentive to the plan prescribed by the surgeon.

In places like these, we are not called upon for elegance of prescription. Cheapness and efficacy of medicine should be our principal considerations. Whether, therefore, the itch be a disease proceeding from simple contagious matter,

matter, or from animalcula burrowing beneath the cuticle, is of little consequence here. Different investigators have, indeed, thought differently on this subject; some having believed they saw the animalcula fully displayed, and in motion; while others have not been able to trace either form or motion of any kind. Whatever difference of opinion may be entertained as to the cause, but little difference, however, has been adopted in the mode of cure. And without taking the trouble to enquire whose eyes, or whose glasses were the best, I beg leave to observe that, whenever I have met with the *irch* in these places, I have generally made use of a strong decoction of white hellebore root; or the unguentum sulphuris of the LONDON Pharmacopeia, mixed, indeed, with a small proportion of soft soap; by which
 addition

addition it will acquire a better tenacity, and be more capable, in consequence of the kali combined with the soap, of penetrating the mucous membrane in which the infectious matter is lodged. The free use of this ointment for about twenty-four hours is generally sufficient. A clean set of cloaths should then be provided for the patient, and he should be allowed to wash himself all over with warm water, or use a warm bath, where it can be procured. After which he may be suffered to intermix with his comrades according to the rules of the poor-house or the prison.

The cloaths such persons carry with them, are frequently little more than rags, and of no value, and had better be destroyed, for fear of communicating the contagion. But if there be
any

any part of the cloaths of real value, it should immediately be taken into a small close room and fumigated. The quantity of brimstone employed for this purpose is generally too small. It should, at least, amount to three or four pounds avoirdupois; otherwise there will be no certainty of destroying the matter of the disease. If used in this proportion, an exposure of the cloaths for twenty-four hours will be sufficient. In the New MIDDLESEX Penitentiary-house, there is a stripping room; and a large and convenient oven erected in a detached office expressly for this purpose.

Such are the principal diseases which are found in poor-houses, work-houses, and prisons, and which are introduced from without: and such appears to me to be the best mode of treating them.

I pass

I pass on to the consideration of those which originate from within. They may be divided into the classes of,

First, CUTACEOUS ERUPTIONS; of which Scald-heads are the principal.

Secondly, RICKETS and WORMS.

Thirdly, FEVERS of different kinds, proceeding from costiveness, colds, an impure atmosphere, depression of spirits, and other causes, which will afterwards be taken notice of.

Of these diseases, the two first classes appertain, almost exclusively, to children; and are, therefore, more frequently to be met with in the work-houses of populous country hamlets, and large manufacturing towns, where the manufactures are declining, and
the.

the poor find a difficulty of procuring work, than in bridewells and other prisons, designed principally for the reception of adults. Though, as infants at ~~the~~ the breast are admitted, with their mothers, into these last, I have found them here also.

The causes of both such classes of diseases are obviously a culpable negligence, inactivity, and a want of cleanliness, with the use of hard and indigestible food. And in proportion as these causes abound, the diseases in consequence thereof will be more or less common, and more or less violent.

It is much to be lamented, that the situation of the poor in this country is not equal to what it was twenty years since. Our commerce has increased beyond the example of any former nation,
excepting

excepting TYRE and CARTHAGE, and perhaps ALEXANDRIA; our manufactures have flourished in proportion hereto; the wealth of the nation has become immense; and every order and class of inhabitants, except the common husbandman and laborer, have derived some advantage from hence. But these, instead of being benefited hereby, have been injured. The price of provisions, and of almost every article of common life, has, within this period, been highly advanced; and the farmer and the manufacturer have derived an advantage by the advance, because their additional profits more than counterbalance their additional expences. But the price of labor has been advanced with a very sparing hand in any place; and in some places it has not been advanced at all. I know one or two worthy farmers, who la-

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ment the situation of their husband-men, and wish much to raise their wages; but they dare not against the general consent of their neighbours; all they can, therefore, perform, and, to their honor, they do perform it, is to ease the poverty they survey, on every side, around them, by pertinent and voluntary benefactions.

I have made these observations, because the causes of almost all the diseases I am considering, and consequently the diseases themselves, are to be traced to this general source.

When a young weaver, or a husband-man, first marries, he may be cleanly in himself, and attentive to his own person; and the woman, to whom he marries, may be equally so; and the earnings of the week may perhaps sup-
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port them with tolerable credit and comfort. As long as this creditable appearance and domestic comfort last, I have frequently observed, that cleanliness, and a due attention to the person, will last likewise. But, in a short time, sickness arises; in a few years a numerous family is produced; the full time of the wife is ingrossed by the wants of her children; and the week passes away without her earning one penny. The wages of the husband, if even the strictest economy be made use of, and the poor, in general, are but indifferent economists, will scarcely suffice to procure the bare necessities of life which are continually called for.* Domestic comfort flies; po-

* In some of the manufacturing towns in *Essex* and *Suffolk*, I have known the distress of some families oblige them to subsist, six weeks frequently without animal food. Their common diet being nothing but bread, potatoes, and water-gruel:

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verty appears on every side ; the children are covered with rags ; cleanliness is entirely given up, and forgotten ; and the whole family wallows in dirt and misery.

But this is not all. The husband, who no longer finds pleasure or satisfaction at home, endeavours to seek for them at the nearest public house : and the sober man is thus converted into a drunkard. This evil increases daily ; and, perhaps, introduces disease ; he forgets the wants of his family, and they are obliged to apply for assistance to their parish. And if the husband die, either from drinking, or from any accidental cause, they are immediately hurried away, by the parish officers, to the work-house, where it is but seldom, indeed, that the order and regularity introduced habituate them

them to regain that love for cleanliness and personal attention which was formerly possessed.

In many villages in this kingdom the parish houses for the reception of the poor are nothing but clay huts, with a clay floor below ; and an apartment above formed entirely by the striding of the thatched roof. This roof, excepting where, fortunately for the miserable inhabitants, it is broken through by time and tempests, and thus admits the healthy concurrence of light and air, is generally covered with cobwebs. But if the roof be entire, the whole room is commonly as dark as a SIBERIAN hovel. There may, perhaps, be traces left of the place where formerly there was a window : and a pane or two of glass may,

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perhaps,

perhaps, yet remain : but the glass being, in general, destroyed, its place is supplied with old ballads, and other papers pasted together. Of such abodes in this kingdom I could give a hundred instances. were they not too common to need instancing. And here are we principally to look for the classes of diseases above enumerated.

But such situations and such diseases are not confined to this kingdom. In IRELAND, many of the institutions, improperly called nurseries for children, are not much preferable to the hovels above described. Seldom is there an infirmary, or airing ground, belonging to any of them. At MILTON Road Nursery, near Dublin, Mr. HOWARD, in his travels that way, found twenty-four children : and, of these, “ eight, says

says he, had scald heads and one the evil.*” At LEINSTER the master himself acted as apothecary; and, as many of the children had cuticular eruptions, of different kinds, from uncleanliness, and coarse indigestible food, he had given them sulphur and milk in the morning, and was preparing to anoint them all for the itch towards night.† Of seventy-five children, of which the nursery consisted, fourteen or fifteen had scald heads: and this, though the society allows a maid for every ten children. And the report of the committee, at the nursery at CON-NAUGHT, stated, in 1786, that “three have lately died of scald heads, and several others are ill of the same complaint. The number in this nursery never exceeds twenty-four.

* Account of Lazarettos, &c. p. 110.

† Vide supr.

In the cure of such complaints in such situations, little can be expected from the skill of the surgeon, if he have not influence enough with the chief parishioners to unite their efforts with his own in producing a complete reformation. The house should, first, be repaired, and lighted with windows, allowed to open, that pure air may occasionally be admitted: it should be put into a state of decency, cleanliness, and order: a master, or matron, should be appointed, possessed of honesty, activity, and good abilities; of humanity in his general demeanour; but of firmness to persevere in the regulations determined upon by his superiors. The food should be in due proportion, and of light and easy digestion; particularly that allotted to the children: bedding and sheets should be allowed; and, though coarse, should be constantly

stantly kept clean. An infirmary should be fixed upon ; and an airing ground marked out, that the children, and others as well, may be properly attended to, when sick, and have a sufficiency of air and exercise when in health. Some kind of work should, likewise, be introduced, in the different branches of which all may engage ; as, the spinning of hemp, the spinning and carding of wool, or any similar occupation.

For want of such kinds of employment, I have frequently seen a spirit of the most unbounded idleness become prevalent among the young and the old : and among the former, it cannot fail, in future life, of laying the foundation for much misconduct and vice ; and such employments, moreover, will considerably assist in defraying the

public expences of the parish or charity.

There are places where such regulations are adopted : and, where they subsist, chearfulness and serenity smile on every countenance ; the whole system is invigorated by health ;—the old and infirm pass on quietly through the short remainder of their lives, and the young are prepared for future industry and usefulness. The best regulated workhouses and poorhouses in this kingdom, I believe, are those at LEEDS and HULL ; and, at the little village of CARDINGTON, in BEDFORDSHIRE ; on which last Mr. HOWARD has passed a due encomium.

In such situations as these, diseases of all kinds are but seldom ; and, it is nothing but the want of due regulation,

tion, the permission of the causes above mentioned to operate, that introduces the complaints of rickets, worms, sore eyes, scald heads, and cutaneous diseases in general. We find nothing of them in those laudable institutions in this country, the FOUNDLING HOSPITAL and the ASYLUM : nor in those, of equal praise and merit, the ORPHAN and FOUNDLING HOSPITALS at VIENNA. At ACKWORTH, near PONTFRACT, is a large and liberal institution belonging to the Quakers. The general average of children admitted into this school is three hundred and ten. In the year 1787, of nine hundred and ninety-two children, who had been admitted in the course of a few years, twelve only had died, and three of these by the small pox in the natural way.

These observations, and directions, principally apply to workhouses and eleemosynary institutions in general; and not so much to prisons; the disorders and improprieties of conduct tolerated in which, I shall more fully consider in a few pages. But as the diseases, to which these observations apply, are sometimes likewise to be met with in prisons, and especially in bridewells, they are not altogether inapplicable to such places. And wherever such diseases are found, independent of the general means of cure already stated, we must apply to the *Materia Medica*, and draw forth the cheapest and most appropriate of its stores.

In workhouses and prisons, where but very small quantities of soap are allowed, it is no uncommon practice to
 substitute

substitute urine in its stead ; and, its acrid and saline particles are not often sufficiently rinsed out after the linen has been hereby rendered clean. Hence, on wearing such linen, the skin is frequently excoriated, especially the tender skin of infants, and a cutaneous eruption is produced. In this case the cure is obvious. The linen producing the eruption should be thrown aside ; the body well washed in warm water ; and the practice prohibited in future.

In small, close, and half suffocated workhouses, and especially in the winter season, I have frequently found the children very much subject to inflamed eyes. But here again the cause is obvious ; and, unless that cause be removed, the application of all medicines and collyriums will be in vain. It proceeds from the acrid property of

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the smoke; not more than half of which passes off frequently by the chimney; the remainder being diffused about the room. In HAMPSHIRE turf and peat are the common fuels employed: the fire is lighted on the hearth, and the children lie grovelling around it. Such chimnies should be repaired, a grate introduced, and stools allowed for the children to sit on. With this alteration, and the free use of milk and water, as a collyrium, or the aqua lithargyri acetati comp. of the LONDON pharmacopæia, or any other metallic collyrium acting as an astringent, should even the inflammation be considerable, the ophthalmia will very soon subside, and the eye be restored to its wonted strength.

Of the cutaneous eruptions of children, originating *within* a work-house,
or

or bridewell, the *TINEA CAPITIS*, or scald head, is the most common. It proceeds from inattention in the mother, or nurse, to keep the epidermis of the skin clean, and to remove those dry and husky scales, which, in infancy, it is continually throwing off. These, by arresting the perspirable matter of the exhalents, as it passes away, become hard, and thicken ; and, by such increasing, and continual hardness and thickness, excoriate the cutis beneath ; till, at length, one universal ulcer is produced, and extended over the whole cranium. The application of expressed oils, rendered viscid by tar, or a solution of the milder gums, will soften the incrustation, and make it gradually exfoliate. And, the diseased incumbrance being thus removed, the ulcer will, in time, put on a heal-

ing appearance, and success crown our exertions.

WORMS and TUMID ABDOMINA are the next diseases I am to consider. This last frequently arises independent of worms; and it owes its origin to too large a collection of secreted mucus in the stomach, and intestinal canal, and the want of peristaltic action, from general debility, to carry off that mucus by stool. From this collection of mucus, and frequently, of indigested food; the abdomen becomes preternaturally distended; and the distension is often as great as in a real tympanum. If worms exist not in the intestines at first, this disease forms an easy shelter for them, when once introduced, and a convenient nidus for their propagation afterwards. The symptoms, in
both

both cases, and the mode of cure, are nearly similar. A ravenous desire for food, at the same time that the limbs become flaccid, and the whole system weakened and emaciated, subsists alike in either instance; there is the same peculiar irritability about the internal membrane of the nose, and the same slimy appearance in the evacuations. This continual inclination for food, though unattended with any advantage, is produced, in the first instance, by the mouths of the lymphatics being enveloped in mucus; and, consequently, all absorption hereby prevented; and, in the second instance, from the consumption of the secreted chyle by the worms themselves.

For the cure of these complaints cathartics have generally been first of all exhibited to remove the offending matter ;

matter ; and, afterwards, bitters and astringents to strengthen the intestinal canal. Of all cathartics calomel is the most effective, and the most to be depended on : it may be combined with rhubarb, which has the advantage of uniting at once a bitter and an astringent property ; or with scammony reduced to a subtle powder, as in that elegant formula in the LONDON pharmacopæia, which derives its name from both these ingredients. This last medicine generally produces nausea, and vomiting at the first dose, but loses this effect after the second or third trial. It should be exhibited in the proportion of eight or ten grains to a child of two years old, and repeated three or four times a week : and, thus exhibited, I have known it remove the most extreme intumescence in about ten or twelve days. It is not often children will

will consent to take bitters ; at least, in any advantageous proportion ; and, after the use of cathartics, our chief dependence, therefore, must be upon chalybate medicines, or preparations of copper, with a liberal use of animal food.

A far worse disease than any yet described is the RACHITIS. I shall not swell this paper with an enquiry when this disease first made its appearance in EUROPE ; or investigate its connexion with the SYPHYLIS. Dr. CULLEN imagined it to be very little, if at all, dependant upon mismanagement of any kind, as to nursing ; at least that, if such circumstances acted at all, they only acted as concomitants, and would never produce the disease “ if there were no predisposition in the child’s original constitution ;” which predisposition,

position, he believed, to be derived from one of the parents; and, in most cases, from the mother, in consequence of weakness, or a scrophulous habit. Were this, however, really the case, I think we should find the rachitis more frequent in the higher ranks of life than among the poor. For, allowing scrophulous habits to be as common in the one case as in the other, and if there be any difference, the former should be more subject to it than the latter, yet the inactivity and domestic quietude in which women in superior ranks of life constantly indulge themselves, must ever produce more weakness and delicacy of constitution than is to be found among the poor. But, though I have met with vast numbers of instances among the lower orders of life, I have rarely met with any instance among families in easy or affluent

fluent circumstances. Added to which, I have scarcely ever known it but in situations where I could easily trace out some impropriety in rearing the child.

I have, therefore, enumerated the RACHITIS, because experience has authorised me to do so, among the diseases of poor-houses, and other eleemosynary institutions, where order and regularity are not properly introduced.

Upon the diagnostic symptoms of the RACHITIS, it would here, I presume, be superfluous to discant. As I believe it to be entirely dependant upon improper food, impure air, or undue exercise, or all these causes collectively, I would advise the food to be changed, exercise, and that in an horizontal position, to be liberally made use of, and
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the free air of the adjacent country, and not that of a close, confined, and, oftentimes, smoky room, to be admitted, and largely inhaled. Astringents of various kinds, and, occasionally, such mild aperitives as rhubarb, and magnesia, may be employed with advantage; but the cold bath is chiefly to be depended upon. And so highly do I estimate the benefit that must infallibly arise from this last, not only in the removal of the rachitis, but in a thousand other cases that are daily occurring in places of the description I am now considering, that I sincerely wish the act of Parliament, that enjoins the erection of a cold bath in prisons of every kind, had been extended to work-houses as well. But, perhaps, even then, we should have seen the same neglect and evasions, which so shamefully take place in the former, only

only repeated in the latter ; and the statute still become as dormant as the most antient and obsolete.

I pass on to the consideration of fever ; a disease which, arising within the confined walls of a poor-house, or a prison, has, in many instances, committed as extensive a havoc as the fire, or the sword. Its causes in such situations, are various. They may be enumerated under the heads of

Intoxication.

Colds.

Costiveness.

Depression of spirits.

General uncleanness and want of fresh air.

Contagious effluvia.

Numerous

Numerous as these causes are, I have never known but one kind of pyrexia produced from them in prisons or poor-houses, and that is the typhus of Dr. CULLEN, or low nervous fever of Dr. HUXHAM.

It may seem singular that, among these causes, and in such situations, INTOXICATION should be advanced as a source of fever; and still more so, that it should be brought forwards as a cause of typhus. I will explain these difficulties.

There is scarcely any prison, in this kingdom, where porter and twopenny, if not spirits, are not too indiscriminately introduced. I have already lamented this evil when, descanting a few pages back, on ulcerated legs; and I cannot again avoid repeating,
that

that it is an evil which ought, by all means, to be utterly abolished; and that, in many instances, it reflects the highest discredit on the police of this country. In a variety of towns the keeper of the gaol is allowed no salary, but supports himself by a public tap; and at BANBURY, in OXFORDSHIRE, a few years since, the gaoler was not only allowed no salary, but was subject to an annual rent from the profits accruing from his tap.

At BATLEY, in YORKSHIRE, the late keeper of the prison died by drinking: his widow keeps the prison at this time, and pays the high bailiff twenty guineas a year for house rent, and licence to sell beer.

And, in instances where this pernicious custom is abolished, we frequently

ly see the windows of the prison rooms immediately fronting the streets ; where liquors of all kinds are communicated, and the neighbouring inhabitants disturbed by an incessant riot, and noise.

In the midst of such impolitic permissions, we cannot wonder that intoxication should be the frequent result, and that fever should ensue in consequence thereof.

In almost any other situation this fever would pass off in a few days, if not a few hours ; or would become a pure synochus, or inflammatory fever ; running through its regular stages, and ever with appropriate symptoms. But, from the adjunct operation of the two last causes above enumerated, I have known the very nature of the fever totally changed, and that in an early stage of
it ;

it ; and the patient who, at first, appeared to possess an inflammatory diathesis, in three or four days discover the most dangerous languor and debility.

It is from this same combination of causes, that the fever so often produced in prisons, and ill conducted poor-houses by COLDS, puts on the same diagnostics of the typhus.

All colds produce a greater or less degree of pyrexia ; and the species of pyrexia is determined by the temperament of the patient ; and, more especially, by the atmosphere which surrounds him. In HOLLAND, therefore, and the hundreds of ESSEX, where the country lies low, and the soil is continually moist, and spongy, the marsh miasmata, that are perpetually ascending,

ing, determine the fever produced, in consequence of cold, to be an intermittent; and so frequent were these intermittents, half a century ago, before land-draining was become general, and the soil properly cultivated, that a man esteemed himself particularly fortunate if he sustained an obstinate tertian or quartan but once only in five, or six years. The fevers of NORTH WALES, and the Northern countries of EUROPE, on the contrary, are, in general, inflammatory; though cold be still the exciting cause: the atmosphere being pure and dry, and the diet, excepting among the most wretched of the peasantry, particularly generous and rich.

It is not, indeed, to be wondered at, therefore, that the fever produced by colds in ill conducted prisons and poor-houses,

houses, acted upon as it ever must be by the co-operation of other causes, should differ from either of these, and prove itself a typhus. And I cannot here avoid lamenting, that this cause of fever, which might easily be obviated, should be allowed to operate so generally. I have seen more instances of fever originating from colds, than from any of the other, or, perhaps, all the other causes added together; and, I have often remonstrated with magistrates upon this subject.

In bridewells this is more particularly true than in work-houses, or any other kind of prisons; for in bridewells we generally find the greatest poverty and want.

The more atrocious guilt of felons, who are confined in county gaols, generally

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merally secures to them some property at least ; and, unless the confinement be very long, a property that is adequate to every necessary want, if œconomy be duly introduced. But vagrants, and petty offenders, when they are first led into bridewells, have, perhaps, scarcely a penny in their pockets at the time, and the cloaths that cover them are already in rags, and indecent. Here they are sentenced to remain, those, at least, who pass under the denomination of fines, for different periods, from a month or six weeks, to two or three years. In a fortnight's time it frequently happens that their rags are of little or no use to them. I have seen them in many prisons in this metropolis, as NEWGATE, CLERKENWELL BRIDEWELL, and the SAVOY PRISON, bare-footed, and bare-legged, and nearly bare-

bare-breached, with only a jacket over their bodies, and that very much tattered, and without any shirt. And I have seen many women nearly as indifferently cloathed. Colds are caught, and fever is introduced. If there be an infirmary, the patient is admitted into it; if not, a straw bed is procured for him, and he lies down in the common night room of the prison, subject to all the noise and outrage of his companions. If a good constitution, or the timely application of medicine, and other assistance, enable him to triumph over the disease, still has he to contend, in a state dreadfully reduced and debilitated, with the same exposure to colds, the original cause of his disease, as before he was affected. And, if in the more full possession of vigor, he was unable to resist the powerful agency of such a cause, how may he

now hope for success, and the recovery of former health. Such relapses, and from such fresh application of cause, I have known occur for three or four times successively, and often, at last, terminate fatally.

This is the history of what takes place in the generality of BRIDEWELLS, and other prisons. But a more liberal conduct is pursued in many; especially in the bridewells at NORWICH and BURY ST. EDMUNDS, and the gaols at OXFORD, READING, and GLOCESTER; where the prisoners are allowed a warm and sufficient dress on their first admission, and clean linen once a week.

I pass on to the consideration of extreme CONSTIPATION in the intestines.

A priori

A priori it may seem singular, that there should ever be occasion for the same class of medicines, as cathartics, for instance, during the most slender, as during the most rich, and luxurious diet. But nothing is more common on first entering into prisons and poor-houses, than excessive costiveness in the intestinal canal; and no medicine is, for the first three weeks or month, so frequently called for as strong and active purges to remove it. Where no medical assistance has been demanded, I have known the patient continue for a fortnight, or even three weeks, without any evacuation whatever; and the abdomen become extremely tense and tumid in consequence hereof.

This peculiar affection is evidently introduced from change of diet, and the absence of all former stimuli: as

exercise, ale, spirits, animal food, spices, and salt ; whereby the peristaltic motion of the intestines was much increased, and accelerated. And, of course, this complaint is more generally to be met with in well regulated prisons, where ale and spirits are prohibited, than in those where they are permitted without restraint.

As the intestines become accustomed to the change of diet, they frequently lose the paralysis which was at first induced ; gradually re-acquire, and perform their allotted function, and the disease wears away. But this seldom takes place without the removal of the constipated feces by purgatives repeatedly administered. The purge I have generally employed is jalap, combined with an equal quantity of cream of tartar, by which combination it acquires

quires much additional potency. From two scruples to a drachm, is generally a sufficient dose for an adult, though, from the extreme torpidity of the intestines, I have known as much given to a child of a twelvemonth old without producing evacuation, pain, or any other effect whatever.

Whether this COSTIVENESS would become an adequate cause of fever by itself, I know not. It falls altogether beneath the class of "*ingesta acria*," enumerated by BOERHAAVE, and that first of all as a proximate cause of fever.* The retention of feculent matter, for so long a period of time, must, at least, however, be a strong coincident cause: and I have repeatedly ob-

* De Morb. Intern. Aph. 586.

served, that, where the patient has had no evacuation for twelve days, or a fortnight, he begins to discover the most evident symptoms of pyrexia; and which symptoms are often removed by the removal of the constipation; though sometimes the pyrexia continues, and a typhus supervenes.

The next cause I have enumerated, is, “*DEPRESSION OF SPIRITS.*” It is not to be wondered at, that this should become a cause of disease, and more especially of the low nervous fever; or that this cause should exist in the situations on which we are now descanting.

Tantum, enim, in humana natura, says GALEN, potest motio animæ, ut et multi præ solâ lætitia morbos evaserint ;

rint; multi etiam præ mœrore ægro-
taverint.—Neque ulla est tam vehe-
mens corporis passio, ut affectiones ani-
mæ vincat.*

Where the greatest jollity is allow-
ed, a gaol or a work-house is but a mi-
serable situation; especially the for-
mer: and on first entrance, when the
ankles are fettered with rivets, and no-
thing but a cold, and often a damp
floor, allowed to lie down upon during
the night. The thought of former
ease, and former liberty, will then arise
in the mind; the present situation will
be contrasted with these; the length
of the confinement, the filthiness of
the prison, the wretchedness of the
society—a society not always too un-

* De Parv. Fil. Exercit.

charitably described in the daring language of an ITALIAN poet,

Whom heaven shuts out from its unfulfilled
bounds,

And hell, as yet, refuses to receive,*

DANTE. INFERN.

will produce the keenest anguish and despondency; and the malignant fever of such places will find an easy entrance into the system. “If it were asked, says Mr. HOWARD, what is the cause of the gaol fever?” it would, in general, be readily replied, “the want of fresh air and cleanliness.” But as I have found, in some prisons abroad, cells and dungeons as offensive and

* Cacciarli i ciel par non esser men belli;
Ni lo profondo inferno gli riceve.

as dirty as any I have observed in this country, where, however, this distemper was unknown, I am obliged to look out for some additional cause of its production. I am of opinion that the sudden change of diet and lodging so affects the SPIRITS of new convicts, that the general causes of putrid fever exert an immediate effect upon them. †”

But without the general causes which are here enumerated, of “WANT OF FRESH AIR, AND CLEANLINESS,” mere depression of spirits would, perhaps, in many instances, operate in vain. I will unite these causes together, therefore, as I have enumerated them together above, and as they are seldom found in such situations single and alone.

* Account of Lazarettos, &c. p. 231.

The UNCLEANLINESS of our poor-houses, and prisons, and, of course, the impurity of their confined air, are sources of universal complaint. Soap, brushes, and brooms, are always allowed very sparingly. The act of parliament, that ordains the erection of baths, is but very rarely complied with. The walls are seldom white limed. There is frequently no vault, and often, where there is, it becomes offensive from the want of a current of water. In the former place clean linen is too sparingly allowed; and in the latter, in many instances, never allowed at all. This last circumstance is not only, in itself, a cause of fever, but a cause of aggravating that fever when produced; and, frequently, of rendering it fatal. No medicine is much more advantageous in the typhus, than the daily change of linen; but

but it frequently happens here, that there are neither shirts nor sheets to change at all.

In the generality of prisons in this city, when the patient complains of illness, and, in consequence, is admitted to the infirmary, if there chance to be one, he finds there only a straw bed, and a rug. The practice is to undress, throw himself naked, if he have no shirt, on the straw bed, and throw his rug, and his own ragged cloaths, over him. Here he lies, without any change of bedding whatsoever, absorbed in his own fetid, and contagious perspiration, till he either dies, or recovers; the spicula of the straw continually irritating and lacerating his skin through the whole course of the disease, and frequently producing ulcers

cers of large extent, and difficult to cure.

A more generous plan is at this time introduced in the MIDDLESEX county prison, where the magistrates seem disposed to allow of every accommodation that may be necessary and useful. Every idea, indeed, of criminality, should be relinquished in time of sickness. The sickness is a punishment which it never was designed the prisoner should sustain, and which, in most cases, would be more than proportionate to his guilt.

Amidst such uncleanness, and impurity of atmosphere, the typhus must be frequently produced ; especially if aided by the heat and fetid effluvium proceeding from large multitudes being crouded

crouded into small spaces. Indeed, the heat alone, which is hereby generated, is sufficient of itself to produce the most dreadful diseases. Calor, says CÆLSUS, si nimius est, corpus effæminat, nervos emollit, stomachum solvit, coctionem prohibet, somnum aufert, sudorem digerit, obnoxium morbis pestilentibus corpus efficit.* This frequently occurs in the sleeping rooms of work houses and poor-houses, but more especially in borough and county gaols. That at SHEFFIELD is so crouded, as to oblige the magistrates to send some of the prisoners to an adjacent bridewell; and the prison for debtors is so small, that writs are frequently not executed, because the debtor cannot, by any means, be thrust in. In the county gaol at WARWICK, in

* Lib. i. cap. 9.

1788, “thirty-two prisoners lay chained in a dungeon of twenty-two feet diameter, down thirty-one steps, two of whom, says Mr. HOWARD, were ill of a slow fever.” And before the convicts went off, who had, a short time prior to this, been ordered to PORTSMOUTH, “this dungeon was so crouded, that some of the poor wretches were forced to stand up, and take a sort of miserable night watch, while the others slept. From the aperture of this dungeon, which is three feet three inches wide, the steam of the prisoner’s breath comes out, in winter, like the smoke of a chimney.*”

Nous voyons, says Dr. INGENHOUS, que la longue vie des hommes depend, en grande partie, de la bonté de l’air

* Account of Lazarettos, &c.

qu'ils respirent. Les meilleurs alimens ne font pas en état de nous garantir des maladies dans un pays malsain ; au lieu qu'on peut se porter très bien avec des alimens d'une quantité inférieure, lorsque l'on respire un air très pure.— On a vu souvent des nations puissantes qui devoient naturellement triompher par la masse enorme de leurs forces de terre & de mer, succomber précisément par les effets de cette malpropreté habituelle sur leurs flottes, & sur leurs armées.

When the typhus is once produced, nobody doubts that the effluvium arising from the bodies of the affected is contagious. And it is not at all surprising, therefore, that in situations which I am now describing, and to

* Expérience sur les végétaux.

which

which may be added hospitals improperly regulated, and the hulks of ships with confined convicts, it should produce the greatest devastation and mortality. The three last surgeons of the CLERKENWELL bridewell in this city, I am credibly informed, were destroyed by contagion received by attending patients there. At the county gaol at MAIDSTONE, in the year 1786, the gaol fever spread with the most alarming rapidity, and twenty fell victims to its violence. And in 1783, the keeper of the WORCESTER gaol, and his wife, and the physician who attended, were all successively destroyed by contagion received from typhous patients in the prison.

What analogy subsists between the typhus of this country, and the plague of foreign lazarettos, I know not ; nor
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is it the province of this paper to examine minutely. I shall only beg leave to remark, that, in all histories of the plague, written by actual surveyors, carbuncles, and glandular tumors, though certain diagnostics of the presence of the disease, are by no means essential to its existence. And I know not of any other phenomena that render it different from the typhus, excepting, perhaps, a greater activity in the virus. Carbuncles and glandular inflammations never appear at the commencement of the plague, and frequently at no period throughout the whole course of the disease. THUCYDIDES, whose accuracy of description is extremely minute, and almost unrivalled, and who was himself an actual observer of every phenomenon that arose, as well as a deep sufferer in that dreadful calamity, makes no mention of

of any such symptoms, or, indeed, of any others, but what may be supposed diagnostic of the common typhus. According to the description of this historian, the patient was first of all attacked with a most violent pain in the head, and most highly inflamed eyes; with fetid breath and exulcerated tonsils. And, after the superior parts of the body were thus affected, the disease spread itself downwards, producing the most immoderate colliquative stools; which, having the appearance of matter, were supposed to proceed from internal ulcerations, or abscesses. And, finally, many of those, who escaped the general fatality of the disease, were, nevertheless, much injured in the extremities of the body, either in their hands, or feet; while some became blind, and others defective in their memory. I know very well

well that the terms *αγξας* and *ακρωτηριας*, into which parts the disease is said to have fallen, have, by many commentators, who have heard of the supposed necessity of buboes, and glandular tumors, been translated “groins and external organs of generation;” but this without any classical authority whatsoever: the real meaning of such expressions being nothing more than the extremities, or extreme parts of the body; and, from the words which immediately succeed the former, most probably the hands and feet only; certainly not the groins; and, therefore, certainly again, they do not refer to buboes, or any other glandular inflammations. To give an opportunity of forming some judgment of the truth of this assertion, I will insert the passage in question, in a note below,

from

from the original of the Greek historian.*

In the plague at SPALATO, in 1784, it was nine months after the neighbouring countries had been infected, and three months after SPALATO itself had been subject to a contagious fever, that the physicians could positively determine this fever to be the plague: and it was not till the expiration of this time, that a single buboe or carbuncle could be discovered. It is the general opinion, that the plague can never be spontaneously produced, any more than

* Διεξήκει γὰρ διὰ παντὸς τῆ σώματος ἀνωθεν ἀεζάμενον τὸ ἐν τῇ κεφαλῇ πρῶτον ἰδρωθεν κακὸν καὶ εἰ τις ἐκ τῶν μεγίστων περιγένοιτο, τῶν γε ΑΚΡΩΤΗΡΙΩΝ ἀντίληψις αὐτὴ ἐπέσημαινε. κατεσκηπίε γὰρ καὶ ἐξ ἄκρας χειρὸς, καὶ ποδὸς. καὶ πολλοὶ σεγισκομένοι τῶν διεφευγόντων.

De BELL. Pelopon.

the

the siphylis, or small pox; but M. VERDONI, physician to the TRIESTE lazaretto, has given it as his opinion, that in consequence of the difference of manner and degree, with which it is propagated in different years, this, as well as any other contagious fever may arise of itself.—All the physicians consulted by Mr. HOWARD acknowledged that it frequently disguised itself in the shape of other fevers; and, in the above instance at SPALATO, it was mistaken three months for an evident typhus. The general symptoms, mode of treatment, cure, and prevention, are precisely the same in both cases. I have made these observations, because, if the disease be but one, the writings and remarks of the physicians at Lazarettos abroad must be possessed of much additional pertinence and value to this country.

The

The first thing to be attended to in the cure of typhus in prisons, and poor-houses, is the removal of the local and efficient causes that produced it. Beer, porter, and spirits, should no longer be indiscriminately allowed : constipation should be removed by the administration of proper cathartics ; a due degree of cloathing, and bedding, should be permitted ; the spirits supported by kind and humane attention, and the prospect held up of recovery and future liberty. Every thing uncleanly and offensive should be removed, clean linen liberally made use of, the patient be no longer exposed to animal heat and effluvium from his companions swarming around him ; and the room, or infirmary, into which he is conveyed, should be dry, and the air pure.

The

The medicines to be employed must depend on the symptoms discovered in the course of the disease. Emetics may be used with advantage in its first commencement ; they remove the nausea universally complained of, empty the stomach of indigested food, and by exciting a gentle sweat, take off the violent contraction of the capillary vessels of the loins and back, which produces extreme pain, and the alternate sensations of extreme heat and cold. This gentle diaphoresis, when once produced, should be sedulously maintained by such diluents as whey, and wine-gruel, with the regular use of antimonials, and neutral salts, given during the effervescence.

If the pulse continue frequent and small, the skin be hot, and parched,

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the respiration difficult, in an erect posture, and other symptoms arise indicating great debility, peruvian bark and wine should be immediately resorted to, and liberally employed. The peruvian bark, if the stomach will admit of it, should be exhibited in powder; and the wine preferred be port or sherry, according to the inclination of the patient. In situations like those we are now describing, it frequently happens, however, that we have no choice as to wine of any kind; and no opportunity of procuring it, at least, in any effective quantity. In this case good old ale, or sound porter, may be employed, and that with considerable advantage. And where symptoms of very great and increasing debility have been present, as difficulty of deglutition, deliquium animi, and coma, or a
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low muttering delirium, I have generally combined them with one fifth part of brandy ; for, during the existence of such symptoms, the quantity swallowed will be, at most, but small, and nearly half, that is attempted to be given, will be spilt on the bedding. This must, however, undoubtedly be regulated by the discretion of the practitioner, and the urgency of the symptoms. I have sometimes seen a patient intoxicated from an improper use of such stimulants ; but more generally I have known him defrauded of his due allowance, and seen the nurse herself intoxicated instead. In places which I am now contemplating, we should be ever on our guard as to this matter ; and be extremely punctilious in our choice of the nurse who attends. In prisons we have none to select from

but fellow prisoners, and their characters must at least, therefore, be suspicious. It is not every prisoner, however, who is addicted to liquors: our choice should be from those who are not. And I have sometimes seen, in despite of first appearances, as minute and as constant attention discovered in the infirmary of a bridewell, as in the houses of the honest and the opulent.

To the above kinds of tonics Dr. CULLEN adds the universal application of cold water; not from personal experience, but from a treatise published at BRESLAW, forty or fifty years ago, and inserted in vol. x. of the BRESLAW Acts of Natural Curiosities.

This is a tonic easy to be procured in any place; and its cheapness, if the
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use of it prove successful, is a high recommendation of it in the places I am now considering. But every patient, whom I have attended, or his friends, have been so repugnant to a remedy of this kind, when proposed, that I have never yet been able to make trial of it. But I mean to do so the first opportunity I meet with. In the plague at ATHENS, it was a practice, as THUCYDIDES informs us, frequently adopted by the diseased from the hope of being cooled, and relieved from the burning heat and insatiable thirst that tormented them. But it does not appear to have been productive of any good effect. For those who, with this view, ran into adjoining wells, gained no advantage thereby whatsoever; and that whether they were moderate in drinking, or whether they drank a large

quantity.* The internal use of cold water in large quantities, and the external use of it, rendered more frigid by ice, is, however, even now a practice much in use amongst the Italian physicians in many fevers, and in the small pox.† Mr. HOWARD, in his “Account of Lazarettos,” mentions many instances of great advantage derived from this practice to patients labouring under the typhus; and one in which the most complete success was obtained after the patient had been supposed to be dying. In prisons and poor-houses it is a remedy which should at least be made trial of “satius

* Οικιῶν γὰρ ἐκ ὑπαγεχσῶν, ἀλλ’ ἐν ηαλυδαῖς πνιγχεῖαι ὡρα ἔσας διατῶμενων, ὁ φθόρος ἐγίγνετο, ἔθενι κύσμω, ἀλλὰ καὶ νεκροὶ ἐπ’ ἀλληλοῖς αποθνησκονῖες ἔκειντο, καὶ ἐν ταῖς ὁδοῖς ἐκυλιδνεντο, καὶ περὶ τας κρήνας ἀπάσας, ημιθνήτες, τη τῇ ὕδατος ἐπιθυμία.

Vide sup.

† Commenc. Norimb. 1736.

est,

est, enim, anceps auxilium experiri,
quam nullum. * ”

Where there is much restlessness, or where the peruvian bark produces, as it sometimes does, involuntary, or too frequent evacuations, opium must be made use of ; and the dose, in general, be small, and frequently repeated. And, if the throat be ulcerated, a strong decoction of peruvian bark, acidulated with muriatic acid, and combined with an equal quantity of port wine, will form a useful and a pleasant gargarism.

I do not attempt to enumerate in this dissertation all the symptoms that occur in this dreadful disease ; nor all the remedies that may be employed.

* Cels. lib. 2. cap. 10.

This would be a sufficient subject for a large treatise of itself; and the object of the enquiry I have undertaken to investigate, is rather the collection, I apprehend, in general terms, of the diseases generally met with in the places adverted to, with general rules for their removal or prevention, than the minute discrimination of all or any of those diseases in particular, with the particular remedies that may occasionally be employed during their course.

SECTION

SECTION III.

On the Scite and Regulation of Prisons, &c.

HAVING therefore endeavoured to collect a general history of the diseases enquired after, and their causes, and to point out what appears to me the most rational plan of operation for their removal wherever they exist, I shall close this treatise with a few general observations on the best means of preventing their origin where they exist not.

Much, I presume, may be collected from what has already been written. The classes of diseases most common

in prisons, and poor-houses, it appears, derive themselves principally from *want of pure air, want of exercise, and proper diet, depression of spirits, exposure to cold, and uncleanness.*

The situation of all such edifices should, therefore, be airy, and dry. For prisons, more especially, the brow of a hill should be chosen, with a steep declivity shelving towards the north, or north west. This is the situation of the new Penitentiary house for Middlesex. And, in consequence hereof, though the wall which surrounds the work grounds and gardens of the prison be, at least, twenty feet high, and, of course, affords the most ample security against escape, its courts lie higher than the wall, and are open to the fresh breeze that blows over it.

Within

Within the building, if there be any room allotted for common intercourse, it should be large, and lofty, with a proportionate chimney, and opposite windows. The night rooms, especially, should not be crowded, and a bedstead and bedding allotted to each individual. These bedsteads should be of iron, and without testers. Such are those employed in the Lazarettos at TRIESTE, and the MIDDLESEX PENITENTIARY HOUSE. If no irregular current of air be permitted to pass through the room, testers and hangings are of no use; on the contrary, they only furnish an asylum for insects and filth.

In the modern penitentiary houses a great advantage to health results from private and solitary cells. Here the prisoners sleep, or, at least, should sleep

alone, and are thus incapable of either generating, or communicating diseases. These cells, as determined by the Act of Parliament,* expressly made and provided, should not be less than nine feet wide ; and these, likewise, should have opposite windows.

The exercise in all parochial or county buildings should be of two kinds, that of WALKING and that of WORK. The total want of the first in adults, is one cause, among others, that have before been enumerated of extreme costiveness, and the diseases consequent thereon ; and, in the case of infants and children, it cannot too much be insisted upon. Yards, or gardens of sufficient magnitude, should therefore be allowed for this purpose in

* 19 Geo. III.

poor-houses ; and, in prisons, the inner courts should be large and paved with broad stones. All subterraneous dungeons should be abolished, and fetters should never be allowed but after attempts to escape, or in other cases of extreme necessity. There is, indeed, much reformation wanted in our public prisons on these two last heads. The dark damp dungeons in the prisons of most EUROPEAN nations, have been the chief cause of gaol fever. They are not known in RUSSIA, or any of the more unpolished nations ; and I am happy to find them prohibited at NORWICH and OXFORD. The application of heavy fetters, on the first admission of a prisoner, is, in almost every instance, cruel ; and, in most instances, the wanton and arbitrary act of the gaoler himself. It impedes exercise, and depresses the spirits. I know

know of no law in this kingdom that gives this unlimited authority to a gaoler. Custodes, said our antient legislators, *pœnam sibi commissorum, non augeant, nec eos torqueant; sed omni sævitia remota, pietateque adhibita, judicia debitè exequantur.** In HEREFORD, to this day, as I am informed, notwithstanding the indecency of the practice, and the arguments that have been urged against it, the female felons are loaded with heavy irons; and, at CHESTER, prisoners are often ironed by the neck, hands, feet, and body, and chained to the floor or the dungeon. Such an inappropriate severity most surely calls aloud for reformation and reprimand. At BURY ST. EDMUNDS this reformation has taken place; and no fetters or hand-

* Flet. lib. 1. cap. 26.

cuffs are permitted, except in cases of extremity.

Respecting the exercise of LABOR, it should be repeated at due intervals of relaxation, and must be determined by the relative situation or manufacture of the adjoining town. The labor in the work-houses and prisons of this kingdom generally consists in the carding and spinning of wool, or hemp, the picking of oakum, or chopping of logwood. In many prisons, and poor-houses, however, as the bridewell at WORCESTER, and the poor-house at MONTGOMERY, there is no labor of any kind introduced. And this extreme inactivity, thus allowed and sanctioned by the magistrates, is worse than the confinement of fetters or a dungeon ; it equally injures the body, and renders the mind more vitiated.

As

As an encouragement to labor, and an inducement to future honesty and activity, many magistrates, both in England and abroad, have laudably established the practice of allowing a prisoner a personal share in his earnings. At HAMBURG, those who are confined are allowed one third ; and, I believe, nearly the same proportion at the RASP-HOUSE in AMSTERDAM. At the House of Industry, at CORK, in IRELAND, the confined are allowed a fourth part of their nett profits ; and, at BURY ST. EDMUNDS, they are allowed half. Those confined in BRIDEWELLS are entitled, indeed, to a part of their earnings by an express Act of Parliament* : but to this statute there is little attention paid any where. In the town BRIDEWELL, at CAMBRIDGE,

* Act 22 Geo. III. Sect. 64.

the prisoners are allowed the whole of their profits ; in the county bridewell at the same place the gaoler takes the whole to himself ; and, in the bridewell at IPSWICH, the gaoler divides the profits with the county. The plan of allowing some proportion of the profits produced, is certainly an equitable, and a politic one. It engenders a habit of industry, is a means of preventing disease, and, by the additional labour performed, repays the county or parish for the indulgence.

There is no article requires more regulation in the poor-houses and prisons of this kingdom, than that of DIET. In many places there is no regular diet at all. The paupers and prisoners are obliged to supply themselves, in whatever manner they will, from their own earnings. In other places,

places, where diets are regularly adhered to, the allowance is too small, and the food not sufficiently varied.

An attention to diet is of infinite consequence where there are children ; and the sour, indigestible food, given to the children at the different nurseries in IRELAND, is one principal cause why the rickets, and many cutaneous disorders, are so prevalent among them. The regulations adopted at the poor-house at LEEDS, on this subject, deserve much commendation. Here the breakfast every day consists of milk pottage, and bread ; the quantity being duly proportioned to the age. The dinner is properly varied ; and consists, according to the day, of animal food, rice milk, pottage, puddings, and cheese. The common beverage is beer : and there is a due allowance of bread,
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at all times, independent of the standard articles of the day. The supper is composed alternately of bread and broth, or bread and milk pottage. The only addition which appears to be here necessary, is that of fresh vegetables, which, though they may be procured with so much ease in the country, seem to be entirely relinquished or forgotten. Of such essential consequence are these, and especially where large bodies of men are collected together, that Sir JOHN PRINGLE imagines the frequent use of them, in our common diet, to be one grand cause why the plague, and other putrid diseases, are now so much less common in EUROPE, than they were formerly.*

In the bridewells, and other prisons

* Diseases of the army.

in ENGLAND, the diet allowed seldom consists of more than bread and water : and of the former, not more than a pound, or a pound and a half, each day, of avoirdupois weight. This is by no means a sufficient quantity for a man in full health to subsist upon : and where the constitution has been for some time impoverished, by so slender, and ill-judged an allowance, it is capable of making but little resistance against any disease that may attack it. A quart of milk daily, with about two pounds of bread, ought, at least, to be allowed. Fresh meat, moreover, should be permitted once or twice a week in the proportion of about a pound at a time ; and, where vegetables are to be procured, and, at an easy rate, they should not be prohibited. And the demand for salt should undoubtedly be complied with.

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The diet, however, should be regulated in prisons, and especially in poor-houses, and eleemosynary institutions in general, according to the age of the inhabitants, and the season of the year. The diet of winter should differ, in some respects, from that of summer, the diet of children from that of adults. Quare, says GALEN, if the treatise to which I refer, be, in reality, of his writing, *pro ætate, tempore et habitu, est victus nobis ineunda ratio : obviandumque constitutionibus, æstibus, et hyemibus : nam ita, demum, optima sanitate degemus.**

The victualling table of the last war for the prisoners belonging to GREAT BRITAIN or FRANCE, as mutually stipulated, allowed a pound and a half of

* De Salubri Diata.

bread,

bread, with three quarters of a pound of meat, by the day, to every man. The common beverage was a French quart and half of beer or cider ; and the occasional allowance of vegetables was superadded. On Fridays alone the meat was exchanged for butter or cheese.—The Act of Parliament that allows prisoners in English bridewells 3d. a day, and convicts half a crown a week, is seldom complied with. The inattention, or improper parsimony of almost all magistrates, in this respect, is highly reprehensible ; and especially as the prisoner has no means of procuring redress.

So much has already been advanced on the subject of CLOATHING and CLEANLINESS, that little more need be added in this place. By far the greater number of all disorders in prisons,

fons, and poor-houses, proceeds from inattention to these fundamental articles. But independent of all consideration of health, prisoners are, I think, entitled to proper cloathing, even in a moral and politic view. We allow them diet, because, by their confinement, we preclude them from procuring it for themselves. But, if the claim upon their country for diet be justly founded, the claim for cloathing is founded on the same principle. Nor should this cloathing, as it is in some prisons, where cloathing is allowed, be taken from the prisoner on the expiration of his confinement. If he be then suffered to go into the streets naked, or only covered with dirty rags, where can he apply for employment with any hope of success? The very appearance of the man must prevent all engagement ;

ment ; and every mechanic whom he solicits, must give an immediate negative to his petition. Whatever habit of industry he may have acquired in a house of correction, this habit will no longer be of use to him ; and he has but the alternative of starving or stealing.

It is from want of a due regulation on this head, that I have known many prisoners recommitted for petty larceny three or four times successively ; and that within a week, or fortnight, after they had been released from confinement. The impropriety of such a measure as this, begins, however, to be generally noticed in the world ; and a different conduct is pursued in many of the best regulated prisons, both in this country, and in GERMANY.

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The CLOATHING adopted should be light and easy ; and should consist, for male prisoners, of shoes, stockings, trowsers, shirt, and jacket. Females should be allowed a like proportion ; with a change of linen to all, at least, once a week.

On the subject of CLEANLINESS, I cannot avoid remarking the propriety of the practice adopted at the bridewell in MARLBOROUGH, of having rollers and towels hung up in the work rooms, and water tubs immediately beneath them. It is in vain to erect baths, and inculcate the necessity of washing the person, if there be no convenience for wiping and drying the person afterwards. I know of no other prison in this kingdom where this is attended to. But this we are not to be surprised at ; for even cold baths, though

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enjoined by an exprefs act of parliament, and of fuch extenfive and effential fervice in all prifons, and poor-houfes, are feldom erected in any of them. That thefe fhould not be found in many old buildings, I cannot be aftonifhed at; but I am very much aftonifhed that no bath is introduced into the new, and, otherwife, commodious prifon at CHELMSFORD. Thofe in SPAIN have, moft of them, large circular ftone bafons for this purpofe, fixt in the different courts or areas.

There is a laudable means of cleanliness made ufe of at the charity fchool at YARMOUTH: it is that of fending the boys to bathe in the fea three times a week, during the fummer, under the infpection of a mafter, This is a practice which may very advantageoufly be adopted whenever there is an
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opportunity, and the school or poor-house is situated in the neighbourhood of an arm of the sea, or a large river.

Independent of *cleanliness of PERSON*, *cleanliness of PLACE* is, likewise, equally indispensable. Every room should, for this purpose, be white limed once or twice a year : and the allowance, which, at NANTWICH, CLERKENWELL, and many other work-houses and prisons, is, or were till of late, submitted to for snuff, and tobacco, should be transferred to soap, mops, and brooms. No such idle preservatives from fever will be necessary, where cleanliness is duly regarded ; and if the custom continue from any other motive, it is a filthy custom, and cannot too soon be dispensed with.

The OFFICES, and INFIRMARY, should be detached buildings, and erected in the most unfrequented spot belonging to the institution. The new MIDDLESEX Penitentiary House is very deficient in these respects. The wash-house, and bake-house for impure cloaths, are situated immediately in front of the governor's house, and on each side of the public gate way. And the infirmary consists of the upper rooms of the front wings of the prison: for the hospital, the plan of which is neat and elegant, and commodious, will not be completed at present. Should ever, therefore, during the present provision, an infectious fever arise in this prison, it will easily communicate itself through every point of it; and the interior windows, which, from every cell, and for the purpose of a complete current of air, open into the
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isles, and thus make the atmosphere of one cell communicate with that of another, will add, in consequence hereof, to the communication of the disease.

The BEDSTEDS of the INFIRMARY should be at due distances from each other ; and, as before remarked, they should be of iron, painted, and without testers. The beds employed should be flock, or horse-hair. I prefer the latter, because horse-hair imbibes less contagious matter than wool, in given circumstances ; and because it is less liable to become lumpy and uneasy. Mr. HOWARD has recommended straw beds : but I have seen the pointed spicula of straw very injurious to the tender skin of patients affected with diseases of long duration ; and it is continually making a litter, and producing uncleanness. Straw-beds have cer-

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tainly,

tainly, *primâ fronte*, the appearance of less expence ; but the frequency with which they require to be renewed, totally, in the issue, destroy this only advantage which can recommend them.

The WINDOWS of the INFIRMARY should be opposed to each other ; they should be large, long, and well ventilated ; and water closets should here, most undoubtedly, be introduced. Victuals should never be permitted to be cooked in the wards of the infirmary ; but in an adjacent room, from which the effluvium may not reach, and become unpleasant to, the patients confined there.

But after all, every degree of wisdom discovered in the building, or the regulation of places of this kind, will be frustrated, if the different officers, concerned

cerned in the superintendence of such places, are ignorant of their duty, or deficient in the performance of it. At MALTA there is a noble hospital; and it has almost every convenience that can be wished for. The average of patients confined here is between five and six hundred. To attend on these, there are only twenty-two servants allowed, and most of them debtors or criminals: while forty attendants are retained, to take care of the grand master's horses and mules in the adjoining stables, amounting to twenty-six only of each kind. No building can be better contrived than the Hospital for Lunatics at CONSTANTINOPLE: but the grossest inattention is paid to the poor wretches confined there; while the race of cats in the neighbourhood find an asylum expressly consecrated to their use, and receive

all the honors they formerly experienced in EGYPT.

In the prisons and poor-houses of GREAT BRITAIN, it is not inattention only that I have to contend against, but the impositions which are perpetrated by the governors. The poor-house at MONTGOMERY is farmed by a person who only attends to it by a deputy ; and yet is paid for personal service. And the high, and exorbitant demand of fees, in county, or borough gaols, on the entrance or release of prisoners, is a very discreditable reflection on the nation at large. This demand of fees does not prevail universally I know : it is prohibited at ALYSBURY, and a few other places ; but it is, by far, too general, and ought to be totally abolished.

To

To remedy such evils and impositions, the neighbouring magistrates should have a committee room on the spot; and here they should transact their business, and adjust their accounts; and not adjourn, as is too frequently done in the country, to an adjacent inn, or tavern, for this purpose.

There are few counties in this kingdom in which the magistrates are sufficient, in both number or activity, to answer every necessary purpose of so essential an office. And much do I regret that gradual deficiency which, in almost every county, is continually occurring. This diminution is so considerable in the environs of MANCHESTER, that Mr. BAYLEY, an active and worthy magistrate of an adjoining vil-

lage, was under the necessity of proposing, a short time since, the appointment of the neighbouring clergy, and practitioners of medicine, to visit and report on the situation of the different work-houses in the division in which he officiates ; consistently with the intention of a statute lately obtained by Mr. WHITBREAD, for this express purpose.* And sorry am I to add, that even this appointment was attended with but little benefit. One work-house has furnished two returns only : and it is not known that any other parish-house has been once visited by the persons appointed.†

* 30 Geo. III. ch. 49.

† For a knowledge of these facts I am indebted to Dr. LETTSOM: they comprise part of a valuable letter written by this gentleman to the Doctor :—and which he has been so obliging as to allow me the use of.

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I cannot, in this place, avoid mentioning, though it is not altogether connected with a medical treatise, the propriety there is in the appointment of an officiating clergyman, in all prisons, at least. To a mind simply humane, there is something extremely indecorous in permitting a criminal to live and die without either religious reproof or consolation. But there is something more than indecorous in the case of penitentiary houses, there is something radically wrong, and impolitic. If the criminal be sentenced to a confinement here for four or five years, and that with daily, and regular returns of labour, and if these returns of labour be supposed sufficient to reclaim him, and introduce into his future life a habit of industry, and honest exertion, how much more probable is it, that he will be reclaimed, when the

additional, and more energetic power of principle is added to that of habit ? when, for the same period of time, the effect of religion has been regularly, and duly tried, and superadded to the effect of regular and constant employment ?

Above all, more especially in the case of poor-houses, and charity schools, I could wish the ladies in the country would more warmly, and frequently, interest themselves. The claim of benevolence, and every soft affection of the heart, is peculiarly their own : and wherever they have thus acted, considerable benefit has, in every instance, accrued. It has done so at FRANKFORT, it has done so at DUNBAR, and, above all, at the village of CARDINGTON, in BEDFORDSHIRE, to which I have already adverted with much satisfaction :

faction : and, in fine, it has done so, and will do so, wherever their friendly interposition is exercised : the institution will flourish, the concerns of morality and religion will prevail, the grand object of this dissertation will be attained, and the poor will be chearful and happy.

CASE
OF
Præter-natural Fœtation,
WITH SOME
OBSERVATIONS
ON THE
PHENOMENA THAT OCCURRED.
READ BEFORE
THE MEDICAL SOCIETY,
October 20, 1794.

Aime la nature, méprise l'opinion, & connois l'homme.

ROUSSEAU.

CÁSE

OF

Præter-natural Fœtation,

&c. &c.

IN the month of December, 1791, I attended, in her labour, the wife of John Murrells ; and, in about three hours from the commencement of her pains, she was delivered of a living child. The singularity of its construction attracted my immediate attention. It had no sexual characteristic whatsoever, neither penis nor pudendum ; it had no anus, no fumis, no umbilicus ; nor could the most minute investigation discover the least trace of any. Its legs
were

were extremely distorted, and curved inwardly. It cried feebly once or twice after birth, and died in about ten minutes.

With the use of a little force, a small, empty, and shrivelled placenta followed soon after the birth of the child; in which could be traced no kind of funis or umbilical vessels of any description, nor any other appendage by which it could have been attached to the child. No discoloration of blood followed its abduction from the uterus.

In a quarter of an hour afterwards, a second child was protruded into the vagina, and delivered with ease. This last twin was, in every respect, a perfect boy, and attached to its own proper placenta, by a perfect funis. It was alive, and vigorous when born,
and

and lived for many weeks afterwards.

The elder of these twins, which, as before related, died a short time after its birth, I dissected a few hours after its death. My friend, Dr. DRAKE, of HADLEIGH, in SUFFOLK, who has obliged the world by many ingenious publications, and Mr. ANDERSON, a surgeon of very extensive practice in SUDBURY, in the same county, were present at, and assisted in the dissection.

The following were the general phenomena that appeared worthy of notice. In the thorax the left lobe of the lungs was preternaturally enlarged, and of a dark discoloration. The aorta ascendens and descendens were both largely increased beyond their natural diameter. The thymus gland was perfect

fect in every respect. In the abdomen, which contained in its cavity about half a pint of a yellow limpid fluid, the stomach was natural, and half filled with a liquid resembling the amnios. The spleen was, in some degree, enlarged: the liver excessively so, and covering the left side as extensively as the right: its colour, notwithstanding, was natural. The left kidney was as large as the liver should have been, and filled with clusters of hydatids. There was no ureter on either side. The renal gland was as large as the natural kidney. The right kidney, about half the size of the left, adhered to, and communicated with the bladder. The bladder was of its natural size, but distended with water. There was no urethra: no internal organs of generation: no passage of any kind from the bladder, excepting, as above remarked,

remarked, to the right kidney. There was no anus, no rectum; the colon terminating insensibly in the peritonæum. This colon was so much enlarged, as to be of the dimensions of the natural stomach, and was filled with meconium. The peritonæum, omentum, and mesentery were natural. The vertebræ, only twenty-four in number, were naturally enough configured, but took a curve round the common area of the pelvis, following, in some measure, the direction of the os coccygis, as high as the natural umbilicus.

OBSER-

OBSERVATIONS

ON

THE FOREGOING CASE.

I HAVE endeavoured to be particular in the narration of this fact, because it appears to be of considerable importance : not merely on account of the singular monstrosity of the foetus, but more especially as it furnishes a decisive answer to a question which has frequently been much agitated, whether the human embryo derives its nutriment from the umbilical vessels, or from the liquor amnii by which it is surrounded ?

By those who maintain the latter, it is, I apprehend, a fact which will
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most chearfully be received, and most abundantly made use of; since I do not recollect more than three or four instances of a similar kind, and those collected, or related in such a manner as not to obtain implicit credit among the opposing class of physiologists. The first I allude to is related by VANDER WIEL, who informs us,* that a child was exhibited for money at the HAGUE, as a public spectacle, who had no umbilicus; and whose parents related that it had never any funis or placenta. There was, however, in the hypogastrium a broad, round, red spot, covered with a very delicate cuticle, and, in the circumference of which, two little aqueducts might be traced, which served to convey the urine from the bladder. The

* Observ. cent post.

child lived three years only; and there does not appear to have been any dissection at its death. A second is related by an anonymous author, in a foreign collection of literary curiosities,* and refers to a hare, which, on being opened, was found to contain three little leverets, two of which, at least, were without placenta or umbilical vessels. Besides these two cases, we are told, by the first author I have quoted,† of a child born with its umbilicus detached from the mother, and cicatrized at the moment of its birth, even though its proper placenta was still in the uterus. And an analogous case is related by HOFFMAN,‡ of a foetus who was born in full health and vigour, even though its connecting

* *Commerc. liter. Norimberg.*

† *Ubi supr.*

‡ *De Pingued.*

funis was found divided in two parts, in consequence of some putrescent disease. But as it is impossible to determine how long the division or cicatrization of these two last had taken place anterior to the birth of the fetuses; and as the two former are in some degree defective in authority, these instances, for want of some more ample corroboration, have not hitherto been readily admitted by disputants who contend for the absolute necessity of a placenta as the sole organ of nutrition to the fetus: and, therefore, BELLINGER, in his treatise on this subject, has ventured to assert, that amidst all the monstrous changes, which nature has ever exhibited in the formation of fetuses, it has never yet produced one instance in which the umbilical funis is not to be traced in some way or another.

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This disputation was, some few years since, entered upon, and conducted with very considerable erudition, and critical acumen, by Mr. JOSEPH GIBSON, of LEITH, and the late Professor MONRO, of EDINBURGH; the former contending in favour of the liquor amnii, and the latter enlisting on the side of the placenta.* As the arguments of these gentlemen, as well as others who have written on the same subject, cannot be otherwise than much affected by the existence of the case before us, I will beg leave to add, in this place, a connected and compendious view of those which appear to be possess of most cogency on both sides.

The embryo, say those physiologists

* This disputation may be seen at full length in the 1st and 2^d vol. of the Medical Essays of Edinburgh.

who

who have written against the necessity of a placenta, is at all times found in an earlier period in the uterus, than the placenta itself: which, indeed, does not appear to possess any great perfection till about two or three months after the first conception of the former. What is it that sustains, then, the embryo through the whole of this earlier period of gestation? And if it be capable of deriving sustenance without a placenta in its incipient existence, why should we doubt its capability in any future stage of being?—That the placenta is not essentially necessary is, moreover, fully obvious from instances of impregnated uteri being found without such an organ; or, where it has existed, from other instances of its connection with the fetus being destroyed, and that without any injury to it, by some disease of the umbilicus,

or a knot so closely tied as to prevent the passage of its contained fluids. We cannot look to the placenta, therefore, as to the source from whence the fetus is to derive its nourishment and growth; and we are compelled, in consequence, to examine into the situation, the nature, and properties of the liquor amnii for this purpose.—And here it must first be observed, that this cannot be an excrementitious fluid, because, instead of increasing with the increase and age of the fetus, as it must in that case certainly do, it is universally found to diminish to the very day of its birth. Were it, indeed, excrementitious, it must be either urine or perspirable matter: and in either instance the tender cuticle of the fetus would be entirely abraded by its acrimony; which is never found to be true. It is, indeed, most probable that the human

man fetus retains its urine till the period of its birth ; because its urinary bladder is generally found much distended with this fluid at that time ; and because those animals, as calves, for example, which discharge their urine into the uterus, have an express vessel for this purpose, which is denominated the urachus, and an express part of the uterus to receive the discharge ; which is totally separated from the division involving the liquor amnii by a membrane termed the alantois. But the negative arguments which prove the liquor amnii not to be excrementitious, are possess of still less cogency than those positive ones which may be advanced in proof of its being a nutritious fluid. It is analogous in its appearance to the albumen of a hen's egg, which is universally acknowledged to compose a nutriment for the

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young chick ; and, like this last, its chemical analysis demonstrates its possession of the properties of milk, chyle, and serum of blood. It is found in the mouth and stomach of viviporous animals, and gives to the embryo, by its mastication, the first idea of its moving its lips to obtain food ; an idea and a motion which are generally noticed on the first birth of a child, when first invited to suck, but which are both lost in a few days, and not recovered without difficulty, if the breast be not soon had recourse to.* What but the digestion of this fluid can produce that recrimment which, under the name of meconium, is always found in the intestines of a fetus ? and which appears to be nothing more than this same fluid, combined with gall and

* Harv. de Gener. Anim.

gastric juice. And what but this digestion can produce that proportional diminution in its general volume, which is always determined in an inverse ratio to the growth and age of the fetus? a diminution which is found in all animals, but more especially in the young chick and rabbit: the former of which is supported, after the eighteenth or twentieth day of incubation, with the richer and thicker yolk, that it may the better learn how to masticate those grains it is soon destined to feed upon; and the latter of which is introduced into the world without any liquor amnii, or other fluid whatsoever. To these arguments might be added, if necessary, the opinion of many of the most antient and respectable Grecian philosophers, as Democritus, and Epicurus, and the analogy that subsists in the cotyledons of

the seeds of plants : all which variety of facts and testimonies appear to assert and corroborate this proposition, that the placenta is not the source of nutriment to a fetus, but that the liquor amnii is.

To these arguments it has been replied, that names alone can never be sufficient to sanctify opinions without the concurrence of facts : but that Hippocrates and Galen, if there were occasion for so doing, might be mentioned as establishing, by their writings, the necessity of a placenta to supply the fetus with nutriment. The cotyledons of plants, and the ova of viviparous animals, ought not to be adduced in the present dispute : they add but little to the argument on the other side, when made the most of, and their infinite difference prevents all real analogy

logy whatsoever. That the chick receives its nourishment from the yolk of the egg, and that it opens its mouth for this purpose we allow ; but this by no means proves satisfactorily, that a human fetus is nourished in the same manner ; nor is it by any means an indisputable fact, that the fetus preserves its mouth generally open ; or that the fluid found in its stomach at birth is a portion of the amnios that surrounds it. Many children are introduced into the world with their lips in perfect contact : and, for aught we know, the fluid found in the stomach and oesophagus may be secreted by the secretory vessels of those organs. It is true, this fluid may, in some measure, resemble both in smell and taste, and some other properties, the surrounding amnios ; but all the aqueous saline secretions of the human body have the

same general properties belonging to them. It does not appear to be at all times smaller in quantity, at the time of birth, than in the earlier periods of gestation ; and were this assertion universally true, it might as readily be accounted for from being absorbed by the capillary veins of the placenta, as carried by the mouth into the stomach. It is true, that independent of the mucus traced in the stomach, there is always some quantity of meconium found in the larger intestines ; but the smallness of the quantity, considering the fetus has been confined for nine months, a quantity which does not amount to what is discharged in one single day from the moment of birth, must rather tend to demonstrate that even this is a secreted substance, than the recrement of a nutritious fluid. It is, moreover, a fact altogether incontrovertible,

trovertible, and attested by RUYSCH, DE GRAAF, ANTOINE, and other writers of considerable credit, that some monstrous fetuses of the human race, as well as of other animals, have been nourished, and sometimes brought forth alive, without the least vestige of any mouth whatsoever, or, indeed, of any other kind of passage which could possibly convey nutriment, or any other substance into the stomach: and yet whose intestines were found to contain some portion, at least, of meconium, though perhaps a small portion. Such instances of monstrosity are by no means uncommon in the writings of embryologists: while those which are capable of being adduced of a want of funis or placenta, are but very few in number; and, either beclouded with much obscurity in the delineation, or the simple narration of persons who

were not witnesses of such a fact themselves, but had only received it as a secondary history from others. Such cases, therefore, till they are confirmed by similar ones in future, are scarcely worthy of our attention; while the frequency of the former produce a plain demonstration that the meconium is not necessarily the recrement of a digested fluid, and that the amnios is not the source of nutriment to the fetus.—Nature seldom operates to no purpose: and the use of this last fluid is obvious: it preserves the members of the fetus soft and extensible; it prevents every undue cohesion, and effectually guards from external injury. It is most necessary, therefore, when the fetus is first formed, and extremely tender; and it is then generally found in the largest abundance; and when afterwards, with continued accretion
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of strength and substance, it is better capable of defending itself, this lubricating fluid bears a less proportionate quantity to its dimensions.—Such appears to be the natural office of the amnios. And if the office of the placenta be not that of affording nutriment to the embryo, prepared and selected from the body of its mother, it becomes those who maintain the contrary to determine what other office can be allotted to so large and complex an organ. And till this is satisfactorily investigated—till some unequivocal instance of a fetus nourished and brought forth without the intercourse of placental vessels, or any other direct communication with its mother, shall be given to the medical world, we deem ourselves justified in contending that the placenta forms the entire source of nutriment, and that the amnios

nios is nothing more than a lubricating and protecting fluid.

The case before us is altogether sufficient, I apprehend, to controvert the truth of the last assertion at least, and, indeed, to prove its total fallacy. For in this instance there was nothing but the amnios from whence the fetus could derive its sustenance: the minuteness and shrivelled appearance of that which seemed to have been designed for its own proper placenta, and its total detachment from the fetus only showing that nature had made an attempt to act consistently with her own general plan; but that, from some latent cause, that attempt was rendered entirely abortive. I think, therefore, this case will be adjudged sufficient to corroborate the truth of those few former ones of a similar kind which
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have been observed, and to remove that academic hesitation with which they have so generally been received. My two medical friends, whose names I have before mentioned, and who assisted in the dissection, are still in existence, and I hope will long continue so, and are ready to unite, if it were necessary, their testimony in proof of the truth of the narration ; as is every one else, I believe, who was present at the moment of delivery ; and the history of the case, though from a variety of occupations, I have been incapable, till now, of bringing it before the public, I took down in a memorandum book on the very day in which it occurred.

With respect to the office of the placenta, so complex in its structure, and so generally found connected with
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the embryo, a difficulty, I own, will still remain undeveloped. It has ever been felt by those physiologists who denied its power of contributing to the nutriment of the fetus, and some other office has therefore been sought after. The memorable HARVEY made the following enquiry without being able to answer it, “*cur foetus in utero non respirans aerem, usque ad mensem decimum, ob defectum non suffocatur? cum natus in septimo vel octavo, quam primum aerem inspirat, inhibitâ postmodum respiratione, ob defectum aeris suffocatur* :—*”——And Sir EDWARD HULSE, about fourscore years ago, entertained, for the first time, the ingenious idea of the placenta being a respiratory organ; similar to the lungs in adults, or rather the gills in aquatic

* De Gen. Anim.

animals. This idea, however, did not, I am induced to think, meet with all that respect, at first, to which it was entitled: for, in the controversy on this subject in the EDINBURGH Medical Essays, there is scarcely a word hinted at concerning it on either side, and the name of the theorist does not once occur; though these Essays were published, at least, twenty years after this theory was introduced to public notice.

Later investigations, nevertheless, on the cause of animal heat, and a more extensive knowledge of the property and powers of different gasses, have shown almost to a demonstration the absolute necessity of an admixture of oxygene with all the circulating fluids of animals, if not of vegetables,

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towards the preservation of life : and the very ingenious Dr. DARWIN has lately written in support of Sir EDWARD HULSE's Theory, with so much spirit and extent of observation, as no doubt will make it an object of general attention and belief.

But, allowing the necessity of some quantity of oxygene to the continuance, if not the commencement of animal life, and that the placenta is an organ which separates, and introduces such oxygene into the blood vessels of the fetus, the question will still recur, in what manner could the fetus in the foregoing case, and in cases of a similar kind, be supplied with oxygene without the intercourse of that organ which is supposed to be created, and connected with it for this express purpose ?

And

And here, convinced as I am of the necessity and continual presence of the oxygenous principle wherever animal or even vegetable life subsists, I wish to propose the question whether this might not be obtained, in such cases, by general absorption from the amnios? The basis of this fluid is pure water; and oxygene, if not a principle of water, is, at least, always found combined with it, and possesses air in its pores. With every drop, therefore, of the liquor amnii that is secreted, a proportional quantity of air must be secreted at the same time. Nor ought the external lymphatics of a fetus to be adjudged incapable of absorbing the oxygenous principle from the surrounding fluid, or carrying it forwards to be mixed with the blood. It is from the surrounding water that fishes receive all the oxygene for which they
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have occasion ; which is from hence absorbed by means of their gills or lungs, an organ altogether adapted to this purpose, and to the medium in which they exist. But in the present instance, it may be remarked, that there was no such organ of adaptation to be found. This I allow. But I must contend, likewise, that air is frequently absorbed by the external lymphatris as well : and that, too, even when combined with a fluid. Dr. KEIL informs us, that he absorbed eighteen ounces from the moisture of a single night* ; and Dr. DARWIN conjectures, that, on the entrance of the embryo into the uterus, it is at first supported in consequence of such absorption ; a small quantity of air insinuating itself, as he imagines, at the

* *Medicina Statica.*

time of the first introduction of the embryo, and possess of a sufficiency of oxygene to support it till the apparatus of a proper placenta is completed. But if this be capable of answering the purpose at first, why may it not be supposed equally capable afterwards? Or in what other way can all extra-uterine fetuses, which are entirely destitute of placentation, and yet are frequently possessed of considerable perfection of form, be supported and enabled to obtain that perfection, if not by absorbing oxygene from the surrounding amnios?—It is, moreover, probable that, before birth, the lymphatics are possessed of a greater aptency and power of absorption than afterwards: for the application of all stimuli have a tendency to destroy their tone; and to the stimuli of friction and air, from which they are free in
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the former situation, they are immediately exposed as soon as that situation is quitted. This production of atony from the application of stimuli is particularly obvious in the lacteals of the stomach; which, in process of time, from the exertion of the same cause, and especially from the immoderate use of vinous spirits, become perfectly paralytic; and the patient, in consequence, dies tabid and emaciated, and without deriving any advantage from the food that is forced into his stomach.

In the egg of a chick there are no placental vessels: there is, however, an air-bag occupying the fundus of the egg, and separated from its albumen by an intervening membrane. As the chick increases in size a larger proportion of air is demanded; and a larger proportion

proportion is actually prepared : for the folliculus aëris is continually expanding till the chick is disengaged from its confinement. But this accretion of air can only be produced by absorption from the atmosphere, and through the substance of the shell ; and experiments made with the exhausted receiver, prove that air is capable of penetrating through this substance. From this air-bag, or receptacle, it must afterwards permeate the coat of the intervening membrane, or it otherwise could produce no benefit to the chick ; and when united to the white and the yolk, it must even then be absorbed by the young chick's lymphatics.

A receptacle or air-bag, in many respects similar, is to be traced in a variety of vegetables during the formation

mination of their fruit or feeds ; as, for example, in the pods of peas and beans, the *staphylea*, and *lychnis veficaria* : and it is from hence only the oxygenous principle is absorbed which the vegetable embryo is continually demanding.

It may, perhaps, be objected, but I think without reason, that the quantity of oxygene contained in the surrounding amnios appears too small for the use of the fetus through the whole period of gestation. It is probable, in these cases, that in proportion as the oxygene is imbibed by the mouths of the absorbent vessels of the fetus, stimulated by a particular appetite, a fresh quantity is poured forth by the secretory vessels of the uterus to fill up the otherwise vacant interstices or pores of the amnios. That there

there is often a very considerable secretion of air in many parts of the body, from the operation of particular causes, cannot be doubted. It occurs in many instances of emphysema; and very often, without so general a propagation, in the fetlock, and other joints of horses that have suffered the fatigue of extreme exercise. In such cases the mouths of the secretory vessels that secrete the necessary lubricating fluids for the respective cavities to which they appertain, are, perhaps, so contracted by spasmodic affection as to preclude every thing but air from transuding into those cavities.

In the present increased secretion of air from the uterus, the cause, however, allowing such a secretion to exist, must be different, though the effect is precisely the same. For here the

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mouths of the secretory vessels, instead of being contracted, are, in all probability, sufficiently open and relaxed : but the infinitesimal vacuities in the pores of the liquor amnii, in consequence of the absorption of its contained oxygene by the fetus, (vacuities which no other fluid but oxygene can occupy) might admit the transfusion of a greater quantity of this last than would otherwise have been secreted ; and this though the uterus was apparently distended at the time. And that the uterus has a peculiar power of secreting oxygene at this time cannot be denied : because where the placenta exists, which is probably the general organ of respiration to a fetus, the arteries of that placenta are found to possess that florid colour which is the certain criterion of the presence of oxygene, and which they can only obtain

obtain from the uterus ; into the membrane of which they are immediately inserted.

But we are altogether ignorant how small a quantity of air, or of food, is capable of preserving a fetus in existence. The man who labours hard, and submits to severe exercise, as running, for instance, or cleaving logs of wood, requires a large quantity of both ; while the sedentary and studious man eats and respire but very little in proportion to the former. In a state of total quiescence the small demand, among all animals, for food, or air, is truly astonishing. I have known a large toad found alive in a cavity, which he exactly filled, in the center of a solid cube of marble of eight or ten feet in diameter : and instances are frequently occurring, of a

similar kind, in the solid bodies of oaks, and many other trees.

Animals that sleep, or continue torpid through the whole of the winter, as dormice, bats, snakes, and flies, require no other food than is derived from their own cellular membranes. And it appears probable that, as all proper respiration is suspended, the necessary quantity of oxygene is supplied to them by absorption from the atmosphere. That their cellular membranes supply them with food is obvious, because, however plump an animal of this kind may be when it, at first, becomes torpid and quiescent, it is always lean and feeble when it awakes in the ensuing spring. Swallows and quails that have been prevented, by disease, from attending their companions in their emigrations,

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or have loitered so long behind as to be incapable of overtaking them, have frequently been found in a state of torpidity on the banks of rivers, and sometimes overflowed with water, without entirely parting with the vis vivifica; and, in the latter instance, where they have been found inundated, the necessary quantity of oxygene could only have been absorbed from the water itself.

Among such animals it does not appear to be a matter of any great consequence whether this torpidity is produced by cold or by any other cause. Flies and maggots, immersed in common water, are soon drowned: but being rendered instantaneously torpid by intoxication, they will retain the power of life for a very long period of time. Flies, therefore, bottled up ac-

cidentally in AMERICA, and other parts of the globe, in strong ale or spruce beer, and apparently dead when poured out with the containing liquor in this country, have frequently recovered on the application of heat and light. And the maggot of the filbert, from the same cause, will remain torpid, but not destroyed, in a phial of brandy, though bottled up for many weeks. It is common with the poulterers in this metropolis to mix alcohol with the grains on which their fowls subsist; and hence they grow continually sleepy, and fatten apace. This, indeed, as Dr. DARWIN has justly observed,* seems to be a practice of no modern invention, for HORACE, and many other poets of the AUGUSTAN age, who were as much attached to

* Zoonomia.

good living as any epicure of the present day, have remarked the consequence of such a diet with high satisfaction to themselves: but, more especially, as, among other parts, the liver was much enlarged, which, at that time, formed a most sumptuous and desirable dish.

Deinde secuti
 Mozonomo pueri magno, discerpta ferentes
 Membra gruis, sparsi sale multo, non sine
 farre,
 Pinguibus et ficis, pastum jecur anseris albi,
 Et leporum avulsos, ut multo suaviùs, arnos,
 Quam si cum lumbis quis edit.*

From the existence, then, of such facts, and many others that might be enumerated, we cannot, I apprehend, have any great difficulty in conceiving a fetus, even when deprived of its pla-

* Lib. 2. Sat. 8.

centa, to be sufficiently accommodated with both food and oxygene, considering the state of almost total quiescence and torpidity in which it exists. The placenta appears to me, however, to be its proper organ of oxygenation, as the liquor amnii appears to be its proper source of nutriment: yet that the former is capable, nevertheless, of communicating nutriment whenever the amnios may fail, or be suddenly discharged; and that, e contrario, the amnios is capable of communicating oxygene whenever the placenta should be defective or wanting.

This two-fold power of preserving life will not appear strange to those who have attentively observed such phenomena of nature as are in any degree analogous hereto. There is every where to be noticed the most
 sedulous

sedulous attention towards propagating and preserving the different species of animals and vegetables; and, in a variety of instances, the introduction of a secondary mode of increase, as a guard against any failure in that which is the common mode. Hence the power we possess of propagating many trees by buds or bulbs, and by suckers, as well as by seeds. Hence the majestic palm, and the creeping fragarium shoot, in the same manner, their tendrils, or younger branches, into the earth, and form a succession of their respective kinds, instead of waiting till their seeds be dispersed. The polypus, and urtica marina, produce their young from their sides, similar to the buds of trees, or the lateral increase of the polyanum aviculare; but they are, likewise, capable of propagation, like other vegetables, by cuttings. The tadpole
does

does not appear to possess any organs of generation till after its metempsychosis into a frog : and there are some aurelias which seem to be metamorphosed into butterflies for the sole purpose of propagation ; since, like the phoenix of antiquity, they die away as soon as they have thus provided the world with a succession. The snail and the worm are hermaphrodites : they are each of them capable of giving impregnation at the moment that they receive it from another ; but they have not the power of impregnating themselves. Snails possess a capability of restoring their heads when decapitated ; crabs are capable of reproducing their largest limbs when destroyed ; and instances are not wanting where some of the largest bones, and most essential limbs of the human body have been regenerated in the same manner.

Whoever

Whoever has read the *Memoires de l'Academie Royale de Paris*, has met with a variety of such instances; and the fifth volume of the *Edinburgh Medical Essays* makes mention of a pair of tibiæ, and an entire glans penis which were thus reproduced. And what is more remarkable, is, that the reproduction of the glans penis could not be prevented, though, from a mistake of the case, it was attempted.

The seeds of plants, and the spawn of fishes, are altogether incalculable. And as it is probable that every atom of farina on the anther of a corol is capable of impregnating the pistile, so is it equally probable that every particle of human semen is a rudimentum homunculi, and capable of impregnating the uterus. But can we conceive such profusion of powers allotted
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to impregnate the uterus, and yet but one means bestowed to rear the young embryo after it has been safely deposited? or, that the propagation and production of man are of so much less consequence in the view of the great Creator, than that of every class of the animal and vegetable world besides?—If not, we must allow the existence of some kind of analogy at least: and that, as there are infinite chances of the formation of the human embryo, there are, at least, more than one of bringing that embryo to maturity and perfection.

FINIS.

